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ONLINE 24-25-26-27 FEBRUARY 2022

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Second International Congress on Biological  
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## **SECOND INTERNATIONAL CONGRESS ON BIOLOGICAL AND HEALTH SCIENCES ABSTRACT BOOK**

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## Editor's Note

The first 'International Congress on Biological and Health Sciences' was organized online and free of charge. We are very happy and proud that various health sciencerelated fields attended the congress. By this event, the distinguished and respected scientists came together to exchange ideas, develop and implement new researches and joint projects. There were 23 invited speakers from 11 different countries and also more than 400 submissions were accepted. More than 50 countries contributed to the congress. We would like to thank all participants and supporters. Hope to see you at our next congress.

Best wishes from Turkey

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Prof. Dr. Hedayat Hosseini Effect of curing agents and cooking methods on biologically active polyamines level in turkey meat	
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# ORAL PRESENTATIONS

## Detection of *Varroa destructor* Mite and *Nosema* spp. in Bee Samples From Bulgaria

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### Abstract:

This study is focused on investigation of bee samples for present of two dangerous bee parasites which have been considered as the most important causes of honeybee colony losses. The aim of this study was to study bee samples from Bulgaria for detection of *Varroa destructor* and *Nosema* spp. In a two-year period during 2020-2021, in private laboratory of “Primavet” and in Department of Experimental parasitology, IEMPAM-BAS were tested 185 bee samples from apiaries, located in different districts of the country. To the private laboratory of “Primavet” were sent 94 samples for diagnostic mainly from colonies with some pathological problems such as abnormal behavior, depopulation of beehives, weakness and high mortality of colonies. In Department of experimental parasitology were investigated 91 bee samples for monitoring of *Varroa destructor* and *Nosema* spp. Diagnostic methods used to detect *Varroa destructor* and to proof spores of *Nosema* spp., included morphological identification and light microscopic examination. Results from private laboratory shown that 32, 98 % of bee samples were infested with *Varroa destructor*. The degree of invasion in the bees was in the range from 0.5% to 60 %. Spores of *Nosema* spp. were established in 26.60% of samples with a degree of invasion in the range from  $3.10^5$  to  $26.10^6$  per bee. Mixed infections of both parasites were observed in 28.72% of samples analyzed. Negative samples were 11.70%. Results from 91 tested samples in experimental laboratory showed the highest percentage of mixed infestation (36, 26 %), while infested with *V. destructor* were 31, 87 %. Spores of *Nosema* spp. was demonstrated in 24, 18 % bee samples. Negative samples were only 7, 69 %. In conclusion, we can say that our study showed prevailing higher percentage of infested with *Varroa destructor* mite bee samples than samples, positive for *Nosema* spp. in our country. We should also note the relatively high percentage of samples with mixed infection. A very small percentage of the tested samples were negative.

Keywords: Honeybee (*Apis mellifera*), *Nosema* spp., *Varroa destructor*, investigation, bee samples

## Chemical Profiling and Antimicrobial Effect of Anatolian Honey Bee Venom Against Different Pathogens that Cause Skin Diseases

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### Abstract:

Due to increasing antibiotic resistance, there is an urgent need to find new antibiotic alternatives or supporters for the treatment of skin disease-causing pathogens. For this reason the aim of the study was examined the antimicrobial and antifungal activity of Anatolian honey bee venom (HBV) against bacteria and yeast-like fungi that cause dermatological infections. At first step chemical analyses of HBV was performed by HPLC method. According to the results of HPLC analysis, we obtained a good separation of apamine, phospholipase A2 and melittin with the ratio of 1.83%, 20.60% and 57.62% respectively. The antimicrobial and antifungal activity of the Anatolian HBV was tested against 3 Gram (+), 7 Gram (-) and 3 yeast fungi. First, the activity of the Anatolian HBV sample against these microorganisms was determined by the agar well diffusion method, then their zones were measured. The macrodilution method was used to determine the minimum inhibitory concentration (MIC) for the antimicrobial activity tests. The results of MIC values were varied from 3.06 µg/mL to 50 µg/mL for the tested microorganisms. It was found that *Streptococcus pyogenes* were the most susceptible bacteria (3.06 µg/mL), followed by *Vibrio sp.* and *Staphylococcus aureus* MRSA+ with a MIC concentration of 6.125 µg/mL. These findings strongly suggest that serum or cream containing Anatolian HBV will be developed as a new antibacterial-antifungal product against Gram-positive, Gram negative and and yeast-like fungi. However, further research is required to evaluate their in vivo efficacy and safe and effective delivery methods for their therapeutic use.

Keywords: Anatolian honey bee venom, HPLC, MIC, dermatological infections.

<sup>#</sup>This study was supported by Düzce University Scientific Research Fund (Project No: 2021.01.01.1248).

*Oral Presentation*

## **Daily and seasonal variation in the activity of wild bees (Hymenoptera, Apoidea) in northern Algeria**

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### **Abstract:**

The appearance of bees coincides with the flowering of plants. The daily activity of wild bees is studied by considering the time of onset in relation to the temperature and relative humidity of the air with the evolution of the number of species. On the other hand, the study of seasonal activity took into account the months of April and May in the experimental station of the national higher agronomic school 'Algiers. Fluctuations in the number of bees depending on climatic factors are considered. The apoid species studied are *Apis mellifera*, *Bombus terrestris*, *Xylocopa violacea*, *Andrena albopunctata*, *Eucera notata*, *Anthophora atriceps* and *Lasioglossum discum*. The results obtained show that the daily activity of the bees studied from March to June reveals that the honey bee flies early, it is followed by wild bees as soon as temperatures rise. Regarding seasonal activity, climatic factors such as temperature and relative humidity in the air influence bee activity. As such, the abundance of bees studied is positively correlated with temperature and negatively correlated with air humidity. This is because *A. mellifera* is affected by relative humidity and a slight increase in temperature. Statistical tests show that these two factors have no effect on *Andrena flavipes* and *Lasioglossum discum*. On the other hand, on *Anthophora atriceps*, temperature acts favorably while relative humidity does not influence. Therefore, above a certain minimum or maximum temperature and relative humidity threshold, solitary bees are affected.

**Keywords:** Wild bees, activity, Algeria

*Oral Presentation*

## **Antimicrobial, Anti-Quorum Sensing, Anti-Biofilm and Anti-Swarming Activities of Ethanolic Chestnut Propolis Extracts**

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### **Abstract:**

Antibiotic resistance, which has increased rapidly in recent years as a result of uncontrolled and unconscious antibiotic consumption, poses a great threat to public health. The inadequacy of existing antibiotics has increased the need for new effective and less toxic antibiotic raw materials or antibiotic derivatives. Propolis is a resinous mixture that honey bees collect from nature for the hygiene and safety of their hives. This natural bee mixture contains many different polyphenols, and volatile oils has wide biological active properties is frequently used in complementary medicine. Raw propolis is usually extracted in 70% ethanol, and used as antimicrobial and antiviral agent. In this study, the antimicrobial activity of ethanolic chestnut propolis was investigated. Antibacterial activity was investigated against *Staphylococcus aureus*, *Mycobacterium smegmatis*, *Chromobacterium violaceum* and *Candida albicans* was by agar well diffusion assay. Anti-quorum sensing, anti-biofilm and anti-swarming activities were investigated against *Chromobacterium violaceum* ATCC 31532, *Chromobacterium violaceum* ATCC 12472 and *Pseudomonas aeruginosa* PAO1 respectively. The results were showed that the chestnut Turkish propolis extract were showed high antimicrobial and antiquorum sensing activity. The high antimicrobial capacity of ethanolic propolis extracts against bacteria with strong resistance to antibiotics needs to be clarified by further research.

**Keywords:** Chestnut, anti-swarming, propolis, anti-quorum sensing, anti-biofilm

## **Biologically Active Properties of Sunflower Honey**

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### **Abstract:**

Honey is a natural bee product that is produced by collecting the nectar (flower honey) in the flowers of plants or the sweet secretions (secretory honey) produced by some insects by making use of the living parts of the plants, collected by honey bees, modified and stored in the honeycomb cells. Sunflower honey is a flower honey produced mostly in Marmara and Thrace regions in Turkey. Since this honey crystallizes very easily, it is not preferred among the people. In this study, the bioactive components and antioxidant properties of sunflower honey were investigated. Moisture, pH, conductivity, color, optical rotation values and proline were determined as physicochemical properties. Total polyphenol, total flavonoid and total antioxidant values were calculated. Total phenolic content of the honey was found  $21.35 \pm 1.30$  mg GAE/100 g, and total antioxidant capacity was  $2030 \mu\text{mol Fe}_2\text{SO}_4 \cdot 7\text{H}_2\text{O/g}$ . The phenolic profile was performed with 19 phenolic standard HPLC-UV and determined sunflower honey was rich in myricetin and chrysin. It was determined that sunflower honey also contains p-OH benzoic acid, catechin, syringic acid, caffeic acid, protocatecquinic acid, catechin, p-coumaric acid, ferulic acid, resveratrol, luteolin, t-cinnamic acid, pinosembrin and daidzein phenolic acid and different flavonoids in varying amounts. It was determined that sunflower honey, which is a light-colored flower honey, has rich content in terms of bioactive components.

**Keywords:** Sunflower honey, phenolics, antioxidant capacity, flavonoids, flower honey

## **Separation of Phenolic Compounds from Propolis Extract**

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### **Abstract:**

Propolis is an important bee product with a variety of biological activities. It is collected from different parts of the plants by honey bees. Biological activity with relation to chemical composition of a propolis depends on the flora of collection site. Even though chemical composition of propolis samples differs by the location but all propolis samples around the world possesses antimicrobial activity. Apitherapy is defined as the usage of bee products in the treatment either for curative or preventive purposes. The usage of propolis for apitherapeutic purposes has increased recently. But its ethanol solubility limits its usage in certain areas. Main objective of this study is to isolate water soluble components of propolis. Isolation of water soluble fraction of propolis was carried out in two steps by using pectin-propolis micro beads. Isolated water soluble fraction was examined by thin layer chromatography and compared with the crude extract. Three main spots were screened on TLC plate after isolation. These spots could be explained by the presence of different class of compounds in the isolate like phenolic acids, flavonoids and caffeic acid esters. It was determined that water soluble fraction contained phenolic acids, their esters and flavonoids like p-OH benzoic acid, Syringic Acid, *t*-cinnamic acid, Hesperidin, Pinocembrin and Caffeic acid phenethyl ester (CAPE). Isolation of water soluble fraction of the propolis extract could be a solution for its usage in restricted areas.

**Keywords:** Micro beads, water soluble fraction, propolis, Thin Layer Chromatography

## **Green Synthesis of Bee Pollen Based Silver Nanoparticles**

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### **Abstract:**

Nanotechnology has an importance in the modern science world, especially in materials science. Synthesis and characterization of nanomaterials with different sizes and shapes constitute the field of study. The fact that nanomaterials (nano particles) have a large surface area and are resistant to high temperatures are some of the qualities that make them superior. With these features, they are used in many other fields such as materials science, pharmaceutical industry, electronics, etc. Many biological sources are used in the synthesis of silver nanoparticles with environmentally friendly methods. Fungi, algae, bacteria, plants are among them. More, faster and faster nanoparticles are obtained in the synthesis with plants. In addition, these particles are easier to obtain and biocompatible for medical applications. Phytochemicals such as alcohols, phenolic compounds, aromatic groups, amines in the structure of plants reduce  $Ag^+$  ions in the aqueous medium and form nanoparticles with the formation of the  $Ag^0$  form. Bee pollen has a rich content in terms of carbohydrates, amino acids, lipids, sterols, terpenes, phenolic substances and vitamins, especially protein. In this way, bee pollen shows antimicrobial, anti-inflammatory, antitumoral, antifungal, antioxidant properties. In this study, bee pollen-based silver nanoparticles were obtained. The obtained nanoparticles were characterized using UV-Vis spectrophotometer and SEM. It was determined that the obtained nanoparticles gave maximum absorbance at 348 nm and the average particle size was between 40-60 nm.

**Keywords:** Green synthesis, pollen, nanotechnology, SEM, eco-friendly

## **The Effect of Differences in Feeding Numbers on Some Growth and Cocoon Features in Commercial Hybrid (M×N) Silkworms**

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### **Abstract:**

Silkworm breeding in Anatolia started about 1500 years ago and continues today with a minor extent. Silkworm breeding, an agricultural activity, is very important because it supports rural development, does not require too much investment, and offers silk, which is a value-added product to the economy. In addition, silkworm is an important gene source. In this study, the effects of different feeding numbers (6, 4 and 2 times a day) on the growth and some cocoon parameters of silkworm larvae were investigated in the conditions of the institute, International Center For Livestock Research and Training. The study was designed with 3 groups and 3 replications for each group. The height and weight of 25 silkworm larvae sampled for each repetition were measured before the first feeding at the beginning of each age. In addition, weight of 100 cocoons, number and weight of cocoons per liter, weight of 40 cocoons with chrysalis and without chrysalis, silk richness, lengths and diameters of the cocoons were determined after cocoon removal. The average number and weight of cocoons per liter of silkworms that are in the feeding program 6, 4 and 2 times a day, found respectively 54, 57 and 67 cocoons and 74, 80 and 102 gr. The average weight of 40 cocoons with chrysalis in 6, 4 and 2 times a day feeding was observed 55, 56 and 60 gr. respectively, these values were averagely 18, 18 and 17 gr without chrysalis. In addition, the average silk richness in the similar feeding order was found to be 32, 31 and 29%, respectively. As a result, this research is still ongoing and every work to be done in the field of silkworm breeding is important for the continuity of an important gene source to be left to future generations.

**Keywords:** Silkworm, Mulberry Leaf, Cocoons, Feeding.

This study is supported financially by General Directorate of Agricultural Research and Policies. In addition, the study is carried out at International Center For Livestock Research and Training.

## **A Research on Determination of Optimum Ratios of PCR Components in Gene Expression Studies**

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### **Abstract:**

Researchers put a lot of effort into optimizing the components used in Real-Time PCR studies. The trial-and-error method is mostly used when determining the components and amounts of the mixture used in the PCR process. Since this situation continues until suitable rates are found, it causes waste of consumables, labor and time. In this study, it was tried to determine the optimum ratios of PCR components for gene expression studies. Rainbow trout larvae were used in the study. Total RNA isolation in larval samples was done with Trizol. The absorbance ratios of the RNAs were checked in the NanoDrop device. The cDNA library was created using the cDNA kit with the obtained RNAs. In the study, the amounts of the components were changed and different PCR processes were performed each time until the appropriate ratio was found. To reduce the cost and determine the final PCR tube volume was reduced from 20 µl to 10 µl, and then 5 µl, respectively. In addition, nuclease-free water was used in some of the component mixtures and not in some. As a result, adding nuclease-free water to the PCR components in the study caused the data not to be taken. With the appropriate annealing temperature optimization, it has been understood that the ratio of 4/2/1/1 (respectively; Master mix/cDNA (50 ng/µl)/Right primer (117 pmol/µl) /Left primer 117 pmol/µl) is appropriate and the final volume in the PCR tubes should not be reduced below 20 µl.

**Keywords:** Gene expression, PCR components, Rainbow trout

## ***Lactococcus garvieae* Isolation from Vaccinated and Non-Vaccinated Cultured Fish Present in the Same Aquatic Ecosystem, and the Antibiotic Resistance of the Isolated Bacteria**

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### Abstract:

In recent years, aquaculture activities have accelerated in Turkey, in suitable sea and freshwater environments. The development of fish production brings about fish diseases and, as a result, unexpected economic losses. *Lactococcus garvieae*, the bacterial pathogen causing lactococcosis, was first isolated from yellowtail in Japan and has afterward been found in many areas where salmonids are cultured such as Turkey. This bacteria cause large economic losses in the aquaculture environment. In this study, we aimed to investigate the presence of *L. garvieae* in cultured rainbow trout (*Oncorhynchus mykiss*) in the freshwater cage system. Overall, the sampling was carried out in four group fish cages (vaccinated group, non-vaccinated group, moribund fish, and dead fish). The head-kidney and liver samples of fish were aseptically streaked on Tryptic Soy Agar and incubated at 30°C for 24 h under aerobic conditions. The isolates were subcultured on the same media to check the purity of the isolate. The pure colonies were typically characterized by Gram staining and the following biochemical tests: cytochrome oxidase, catalase, and motility. Bacterial DNA was extracted by using the QIAamp DNA mini kit. The identification of the bacterial colonies was performed by PCR assay. A forward primer pLG-1 (5'-CATAACAATGAGAATCGC-3') and a reverse primer pLG-2 (5'-GCACCCTCGCGGGTTG-3') for PCR amplification of the small subunit 16S rRNA gene sequence of *L. garvieae* were used. Also, the antibiotic susceptibility of *L. garvieae* and others isolated fish pathogenic bacteria were determined by the disk diffusion method (Kirby Bauer method) as described by the Clinical and Laboratory Standards Institute. As a result, *L. garvieae* were isolated from 4 out of 30 fish in the vaccinated group, 10 out of 30 fish in the non-vaccinated group, 16 out of 22 fish in the moribund group, and 21 out of 35 fish in the dead group. According to the results of disc diffusion, all *L. garvieae* isolates were sensitive to Amoxicillin, enrofloxacin, florfenicol, erythromycin, oxytetracycline, penicillin, doxycycline, and resistant to sultramisin, oxolinic acid, and gentamicin. The results proved that the vaccines protect the cultured fish against lactococcus.

**Keywords:** Fish, freshwater cages, *L. garvieae*, antibacterial susceptibility.

The study is financially supported by a project entitled "Improving Sustainability and Performance of Aquaculture Farming System: breeding for lactococcosis resistance in Rainbow Trout"

## Proteomic Profiling And Functional Characterization Of The Secretome Of *Anisakis simplex* L3 Larvae

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### Abstract:

*Anisakis simplex* L3 larvae are one of the major etiological factors of human anisakiasis, which is one of the most important foodborne parasitic diseases. Nevertheless, to date, *Anisakis* secretome proteins, with important functions in nematode pathogenicity and host–parasite interactions, have not been extensively explored. Therefore, the aim of this study was to identify and characterize the excretory–secretory (ES) proteins of *A. simplex* L3 larvae. ES proteins of *A. simplex* were subjected to liquid chromatography–tandem mass spectrometry (LC–MS/MS) analysis, and the identified proteins were then analyzed using bioinformatics tools. A total of 158 proteins were detected. Gene Ontology (GO) annotations, Kyoto Encyclopedia of Genes and Genomes (KEGG) pathways, and enzymes were assigned to ES proteins and enrichment analysis of these terms was performed by comparison with whole *A. simplex* proteome. The most enriched GO annotations were terms related to the glycolytic process, larval development, antioxidants, and cuticle, while among the KEGG pathways the main enriched group was associated with carbohydrate metabolism. Furthermore, proteases were found to be highly represented enzymes in the secretome (17% of ES proteins). Another finding was identification of essential proteins (21% of ES proteins) that are indispensable for the survival of an organism. Important findings were identification of pathogenicity-related proteins, allergens, and potential allergens. Nine potential pathogenicity-related proteins were predicted, which were mostly homologs of chaperones. Of all secretome proteins, one was identified as an allergen, which was Ani s 4, and 18 were putative allergens, most of which were homologs of nematode and arthropod allergens. Another finding was prediction of proteins possible involved in interactions between *A. simplex* ES proteins as well as proteins involved in interactions between hosts and parasite. In conclusion, this study represents the first global analysis of *Anisakis* ES proteins. The findings provide a better understanding of survival and invasion strategies of *A. simplex* L3 larvae. In addition, the identified secretome proteins could be used as targets for new drugs, vaccines, and diagnostic assays.

Keywords: allergen, *Anisakis simplex*, pathogenicity, proteomics, secretome

This research was funded by National Veterinary Research Institute in Puławy, Poland (statutory funds no. S/472).

*Oral Presentation*

## **Legislation for sturgeon by-catch during commercial fishing in the Black Sea basin of Ukraine**

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### **Abstract:**

This topic attracted our attention, because within the last 5 years there are no reports about the by-catch of sturgeon species from the legal commercial fishermen, while these fishes are reported by State Fisheries Agency in the catches of illegal fisherman. Ukrainian Legislation was analyzed for its integrity and coherence. It was found that international conservation acts were not adopted and all sturgeon species are protected only by the national law "About the Red Book" that ban harvesting of these species without special permits. At the same time, article 6.1.15 of "Commercial fishing rules in the Black Sea basin" says that only alive Red Book species from by-catches must be released. Dormant fish must be accounted for an act and recorded in the catch and effort logbook. If a user removes dormant sturgeon and follows current regulations, it will violate article 6.1.1. of the same rules, namely "Do not exceed the volume of quotas for aquatic living resources...". The punishment that will occur to a legal user for following applicable legislation will be a fine of 340–680 UAH (11–22 Euro) plus compensation for illegally harvested sturgeon species: from 18 870–110 000 UAH (609–3550 Euro) – depending on species. Moreover, the guilt will be easily confirmed by the records in the logbook and the accounting act. On the opposite occasion, when the user violates this manual and threw the dormant sturgeon overboard, his guilt will be a fine of 170–510 UAH (5–16 Euro) without compensation for illegal harvest. Even more, proving this guilt will be impossible. The user can deny the fact of catching or claim that the sturgeon was alive during release. There is no penalty for further death of the fish in the water. Therefore, this is a unique case of legal conflict of Ukrainian law, when the punishment for following the rule is higher than for violating it. We propose to remove the possibility of punishment for reporting and to underline that Red Book species must be returned to the wild in any condition and to encourage the fact of reporting.

**Keywords:** sturgeon bycatch, the Black Sea, Ukraine

#WWF NL "Danube basin freshwater programme", Project number: 1327/A2864 2 stage2 stage.

*Oral Presentation*

## **Prevalence and Molecular Characterization of Pathogenic Fungus in Freshwater Fishes of District, Punjab**

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### **Abstract:**

Pathogenic fungi are known to invade all stages of fish life from egg to adult and cause significant losses in aquaculture. Mucormycosis is a life-threatening fungal disease caused by order Mucorales with *Rhizopus spp.* and *Mucor spp.* In this study, spatial distribution and molecular detection of isolated *Rhizopus spp.* was determined from diseased and healthy fish. For isolation of pathogenic fungus, 110 fish samples (45 healthy and 65 diseased) were collected under hygienic conditions from different fish farms of districts of Punjab-Pakistan. After examination, only one fungal isolate was identified of *Rhizopus spp.* Prevalence of disease was 70% in Mandi bahauddin, 47% in Chunian, 26.6% in Ali-pur-chatta, 55% in Muzafargarph, 50% in Rawalpindi, 55% in Burewala and 20% in Lahore. Diseased samples had multiple symptoms including fin erosion, tail erosion, gill rot, damaged skin and anterior portion. Prevalence of *Rhizopus spp.* in healthy and diseased fish was 59%. This study described spatial distribution and prevalence of pathogenic fungus *Rhizopus spp.* in healthy and diseased farmed fish of Punjab, Pakistan. This will help in development of effective control and prevention strategies to minimize *Rhizopus spp.* in farmed fish.

**Keywords:** pathogenic fungus, prevalence, spatial distribution, *Rhizopus spp.*, freshwater fishes

*Oral Presentation*

## **In-vitro antiviral activity of Neem (*Azadirachta indica* L.) Bark extract against Bovine Corona Virus, Bovine Herpes Virus-1, Bovine Parainfluenza Virus-3, and Bovine Entero Virus**

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### **Abstract:**

It was reported that Neem leaves and components, which are frequently used in the medical field from past to present, exhibit immunomodulatory, anti-inflammatory, antihyperglycemic, antiulcer, antifungal, antibacterial, antiviral, antioxidant, antimutagenic, and anticarcinogenic properties. In this study, the antiviral activity of *Azadirachta indica* (Neem Bark) extract on BCoV, BHV-1, BPIV-3, and anti-BEV in vitro was evaluated. It was aimed to determine whether the antiviral activities were effective in the cell entry or replication phase for each virus. Before evaluating the antiviral efficacy, the cytotoxic activity of different concentrations of Neem Bark extracts diluted with the medium was determined in MDBK cell culture. It was determined that it did not cause cytotoxicity at concentrations lower than 0.87 mg/mL concentration in this cell culture. Antiviral efficacy was determined by the presence of cytopathogenic effect (CPE) after microscopic analysis. Tissue culture infective dose (TCID<sub>50</sub>) was calculated according to the Spearman-Kärber method by determining 50% endpoint titer of viruses with and without neem extract. In conclusion, although Neem Bark extract did not have a significant effect on the attachment of BPIV-3 and BEV to the host cell, it was determined that there was a 100-fold decrease in TCID<sub>50</sub> values of BCoV virus treated with Neem extract, and virus replication was completely blocked on BHV-1. It was thought that in vivo trials are needed for a more detailed evaluation of its antiviral activity on BCoV and BHV-1, which has antiviral activity in vitro. Also, a detailed determination of the effectiveness of Neem Bark extract against other viruses will contribute to future antiviral drug trials.

**Keywords:** Neem Bark, BHV-1, BCoV, BPIV-3, BEV

## **Oral hygiene and periodontal indices in children with 1 type diabetes mellitus during gingivitis treatment**

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### **Abstract:**

The oral manifestations of diabetes mellitus are observed in the vast majority of patients, and some dentists indicate 100 % damage to the tissues of the oral cavity [1, 2]. The purpose of the study was to assess the state of periodontal disease in children with type 1 diabetes mellitus under the influence of our treatment scheme of chronic catarrhal gingivitis. The study involved 56 patients with type 1 diabetes mellitus and 26 children without concomitant diseases. We determined oral hygiene index (OHI) according to Fedorov-Volodkina and OHI-S (Green, Vermillion), PMA index, gingival index according to Loe, Silness, and the bleeding index according to Muhleman H.R. We have found a statistically significant difference in a month since the treatment completes, and in 3 month, 6 month, and a year follow-up period. Oral hygiene indices before the treatment demonstrated unsatisfactory level of oral hygiene, but they considerably improved since the treatment had started. Periodontal indices evidenced a moderate degree of the inflammatory process. These values decreased significantly and pointed out mild inflammation in 1 month after the treatment. In 3 months, 6 months and a year follow up period the above indices slightly increased, but, nevertheless, were twice as lower than before the treatment. The use of the proposed treatment scheme had a positive effect on the clinical course of periodontal diseases and contributed to the improvement both in the immediate and long-term follow up.

**Keywords:** chronic catarrhal gingivitis, oral hygiene indices, periodontal indices, type 1 diabetes mellitus.

## Brucellosis in food animals of Southern Khyber Pakhtunkhwa, Pakistan

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### Abstract

Brucellosis is an important highly infectious, contagious and zoonotic potential disease that affects humans and various animal species across the globe. The disease has get significance important as food borne illness as well as in livestock farmers. In livestock, it responsible for decrease productivity, retarded offspring growth, last trimester abortion and is a major impediment for the trade. The diseases is prevalent in all food animal species with notable complication. The present study was design to investigate the prevalence of brucellosis, molecular confirmation and determination of associated risk factors responsible for *Brucella* species in the study areas in food animals including buffalo, cattle and sheep. A total of 600 serum samples were collected from animals in various areas consist of Tank, D. I. Khan, Bannu and Lakkimarwat of Southern, Khyber Pakhtunkhwa Pakistan. Similarly 150 samples comprises of 50 sample for each animal specie were collected from each district. The Rose Bengal plate test (RBPT) was used for initial screening followed by Competitive Enzyme Linked Immunosorbent Assay (c-ELISA) and final confirmation by polymerase chain reaction (PCR). The sero-prevalence of brucellosis were also determined in relation to specie, area and sex. Thus the data collected were interpreted and subjected for statistical analysis. Results revealed overall sero-prevalence of brucellosis was 14.16% and 12.30% through RBPT and cELISA respectively. Among the investigated area highest prevalence 15.3 % was observed in district D. I. Khan followed by 12.66% in Bannu. Similarly highest sero-prevalence 20% was observed in buffalo followed by cattle 11% across the study area. The c-ELISA confirmed positive samples were further analyzed through conventional PCR. Out of total 85 samples 13 (15.29%) were confirmed for genus *Brucella*. Among these 10.58% (n=9) were detected positive for *Brucella abortus* and 2.35% (n=2) was confirmed as *Brucella melitensis*. The result showed that higher prevalence was observed in buffalo. It also revealed that PCR is more sensitive followed by c-ELISA. However RBPT is helpful for initial screening of the naturally infected animals.

Key words: Brucellosis, buffalo, cow, sheep, RBPT, Pakistan.

## Screening and Isolation of Asparaginase Producers from Soil Source and its Application in Food products

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### Abstract:

Asparaginases have applications in the medical and food industry as part of an anticancer drug and as a mechanism to reduce acrylamide content in food. Asparaginases were first discovered by Lang in 1904 in bovine tissues. Based on the available structural data, enzymes with L-asparaginase activity can be divided into bacterial-type and plant-type. They differ in structure and their substrate affinity and specificity profiles. Bacterial enzymes are then further divided in type I and type II, of which the type II enzyme obtained from *Escherichia coli* [*Escherichia coli* L-asparaginase II (EcAII)] is used clinically. Diluted garden soil sample was taken. Colonies were picked and screened for asparaginase activity on Minimal media. Cultures were selected based on the supernatant and qualitative/quantitative assays. Culture characterization and identification was done with the help of microscopic and macroscopic techniques, checking culture growth parameters, inoculation on MacConkey agar, Xylose Lysine Deoxycholate (XLD) agar and by other identification tests. Application of the crude enzyme obtained from the isolates was done by performing assays using a frozen ready-to-cook food sample. Thin Layer Chromatography (TLC) of untreated and treated food samples was also performed. Four isolates were selected for study, which were later identified as *Pseudomonas putida*. The assays showed enzyme activity in all four cultures. Effect of the enzyme on asparagine content in the potato smiley was also detected. Treated samples showed more absorbance than the untreated sample. TLC method indicated that treated samples showed aspartic acid spots, thus showing effect of the enzyme although untreated sample plate showed no asparagine spots suggesting that very little amounts of asparagine are present in the sample, or the raw potato used. Hence, it can be concluded that asparaginase added to food samples reduces the levels of acrylamide formed making the food product healthier.

Keywords: asparaginase, acrylamide, asparagine, *Pseudomonas putida*, Nessler reagent

## **Evaluation of Carcasses of Cattle Slaughtered in Winter in Kırıkkale Province According to Slaughterhouse Data**

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### **Abstract**

This study was conducted to determine the present situation of cattle slaughtered in a private slaughterhouse in Kırıkkale province and some slaughter features. When the data of the private slaughterhouse routine records were considered, the number of cattle that were slaughtered in the months of December (the year of 2019), January and February were detected as 397, 261 and 171, respectively. While the quite large part of cattle slaughtered were consisted of Simmental cattle, the percentages for the months were determined as 96.22%, 95.78% and 95.91%, respectively. This was followed by Holstein breed one of the cultured-cattle breed (2.27%, 2.30% and 2.34%). While it was seen that mostly male cattle were slaughtered (98.83%-99.23%); the cattle aged at 15-18 months of age had more than of 50% of the cattle slaughtering (54.79%-54.97%) in the study. The pre-slaughter age of Simmental male cattles which have a great majority of slaughtering were detected as average 16.91 months of age. This study was one of the first study related the potential of Kırıkkale province in terms of cattle slaughtering features. Thereby, it can be predicted that the results of the present study will provide a data archive for further studies.

Keywords: Slaughtering, Kırıkkale, Winter, Cattle

## Determination of Sensory and Antioxidant Properties of Black Imported Tea, Frequently Consumed in Şanlıurfa, Different Brewing Times

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### Abstract:

Tea is an aromatic beverage prepared by pouring hot or boiling water over the dried leaves of the plant known as *Camellia sinensis*. The chemical composition of teas can vary depending on the brewing conditions. The aim of this study is to determine the sensory and antioxidant properties of imported black tea, which is lovingly consumed by the public in Şanlıurfa, Turkey, at different brewing (infusion) times. For this purpose; analyzes of total phenolic substance, total flavonoid substance, antioxidant activity (DPPH and ABTS) and color values of the tea sample were performed after 15, 30 and 60 minutes of brewing. It was observed that there was a significant increase in the total phenolic and total flavonoid substance amounts of the tea sample during the brewing period ( $p < 0.01$ ). In the antioxidant activity of the tea sample; It was observed that DPPH and ABTS radical scavenging efficiency increased significantly in parallel with increasing the concentration amount ( $p < 0.01$ ). In addition, the highest DPPH and ABTS radical scavenging efficiency was observed in 60 min brewing time. In the color analysis of the tea sample; It was observed that L\* (whiteness/darkness) and b\* (yellow/blue) values increased for 30 minutes during brewing but decreased again for 60 minutes, a\* (red/green) value increased during the brewing period, and its value decreased for 30 minutes and increased again for 60 minutes. It was observed that there was a positive correlation between total phenolic substance and a\* and b\* value, and a negative correlation between L\* value. It was observed that there was a positive correlation between total flavonoid substance and L\* and b\* values and a negative correlation a\* value. As a result, it has been concluded that imported tea, which is frequently preferred by the people in Şanlıurfa province, has high antioxidant activity and that prolonging the brewing time has a positive effect on the sensory and antioxidant properties of this tea.

Keywords: Antioxidant activity, imported black tea, brewing time, color

## **The effect of water kefir on rainbow trout (*Oncorhynchus mykiss*) meat quality and some foodborne pathogen and spoilage bacteria**

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### **Abstract:**

Water kefir, which was analyzed in terms of antimicrobial and meat quality on trout in the present study, have been investigated in various studies in recent years in terms of its effects on human health. However, the literature is not very rich in the effects of kefir on foodborne pathogenic and spoilage bacteria. In addition, the changes occurring in the fish, whose gut microbiota has been enriched in probiotics within the production environment, should be analyzed in detail. Therefore, in this study, water kefir, which has a quite low production cost, was analyzed in terms of its effects on certain groups of bacteria that cause serious problems in the breeding and processing of fish as a functional food; and the changes in the meat quality after harvesting were examined. The antimicrobial effect of water kefir was tested by microdilution and disc diffusion methods on 1 foodborne pathogens (*Aeromonas hydrophila*) and 5 fish spoilage bacteria (*Proteus mirabilis*, *Pseudomonas luteola*, *Enterobacter cloacae*, *Enterobacter faecalis* and *Photobacterium damsela*). Also fish meat whose gut microbiota was enriched with water kefir with 4 week feeding was analyzed in terms of the protein, fat and free fatty acid levels. The results of the study showed that water kefir can be used as an antimicrobial agent in fish and makes positive contributions to fatty acid quality.

**Keywords:** atherogenicity, pathogen, spoilage bacteria, thrombogenicity, water kefir

*Oral Presentation*

## **Spatial and temporal variation of faecal pollution indicators in the Oualidia lagoon, a shellfish growing area in Morocco**

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**Abstract:**

The spatio-temporal variations of environmental parameters (temperature, salinity, pH and turbidity) and content of *Escherichia coli* (*E. coli*) and faecal streptococci (FS) in water were studied between July 2010 and July 2011, at the Oualidia lagoon in relation to the discharge of domestic and agricultural wastewater. The analysis of the spatio-temporal variability, performed by principal component analysis (PCA) combining environmental and microbiological parameters, revealed a significant seasonal variation (at  $p < 0.05$ ) for the lagoon waters. Results show two types of pollutions (i) urban pollution due to the intense tourist activity in summer and (ii) agricultural pollution due to leaching and infiltration of agricultural practices around the lagoon in the rainy season. The observations in this study can be useful for implementing faecal pollution management strategies and for predicting faecal contamination as a function of meteorological conditions.

**Keywords:** Marine pollution, watershed, Oualidia lagoon, *E. coli*, fecal streptococci.

This work was carried out in the framework of collaboration between the University Chouaib Doukkali of El Jadida and Sea Network REMER. The preparation of this paper was supported by grant No. 27106SJ from the Hubert Curien Program-Volubilis.

## **Pharmacological protocols in therapeutical treatments in Vestibular syndrom in pet animals**

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### **Abstract:**

Dysfunctions of vestibular system as result of vestibular system disorders are a common neurological problem encountered in small animal practice. Vestibular apparatus is the main responsibility for maintaining the body's balance, which is also assisted by the integration with the visual apparatus and the general perception system. Very often the veterinarians are faced with determining the underlying etiology of affected animals. In order to establish an accurate etiological diagnosis, proper interpretation of neurological deficits and precise neuroanatomical localization are essential. The aim of this study was to create a therapeutical protocol of Vestibular syndrom according to neurological examination and neurological diagnosis of the vestibular syndrom etiopathogenesis. This study was carried in some Pet life Hospital in Tirana District. In this study, 22 cats and 19 dogs were included. All the patients were hospitalised for a period of two weeks after the clinical and hematological examination according to clinical diagnostic neurological algorithm. Patients were classified according to the type of Vestibular Syndrome (SVP Vestibular Peripheral Syndrome, SVV Vestibular Sindrome, SVB Vestibular Bilateral Syndrome, and SVPr Vestibular Paradoxal Syndrome respectively in the dog and in the cat. SV therapy was performed depending on the cause, the lesion, the location of the lesion and the symptomatology. Thus in the case of chronic otitis the treatment consisted of the use of steroidal anti-inflammatory drugs such as dexamethasone and prednisolone in doses determined according to the type of animal and body weight, as well as the use of systemic broad-spectrum antibiotics. Local treatment was applied in all cases of otitis except in cases where SV I was caused as a result of incorrect local mechanical cleaning of the ear. Antibiotic treatment has been reserved in cases of toxicity of the vestibular system from the indiscriminate use of dosage and duration of antibiotics in dogs and cats. In the case of inflammatory polyps, their removal is performed by medication and surgery.. The case of the cat with toxoplasmosis was treated with Clindamycin.

Key words: vestibular syndrome, clindamycin, dexamethasone, otit

## **Medical treatment in different cases of Glaucoma in dogs**

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### **Abstract**

Glaucoma consists in increasing intraocular pressure in the eye. It may be acute or chronic and is a consequence of changes in the flow of water. It is one of the most common pathologies of the eyes that can lead to blindness. The aim of this study is to describe different pharmaceutical therapeutic protocols through combined schemes for the treatment of this pathology, introducing into the scheme also human ophthalmic preparations. Glaucoma incidence in animals increases with age. While there is no cure for chronic glaucoma, numerous topical medications are used to reduce the elevated intraocular pressure seen in animals. The main difficulties of this ocular pathology are related, not only to timely diagnosis but also to its treatment, depending on the time of its occurrence. In this study is determined the treatment regimens for acute, chronic glaucoma as well as secondary and primary glaucoma. The most important purpose of this study was the comparative medical treatment in different type of Glaucoma. This study was made possible through the examination of all cases presented at the "Pet Life Hospital". The patients were dogs. The medical treatment was based in principle of reducing the IOP and the inflammation in cases of secondary glaucoma and traumatic causes. Eyes afflicted with chronic glaucoma during the treatment were usually irreversibly blind and uncomfortable. Blind eyes with acute glaucoma, during treatment turned out to have more opportunities for vision, once intraocular pressure (IOP) was normalized in a timely manner and the glaucoma was still in its early stage. Pharmacotherapy of different types of glaucoma was based on the use of, beta blockers, prostaglandin analogues, cholinergic agonists, acetyl cholinesterase inhibitors, anhydrase inhibitors, alpha 2 adrenergic agonists, carbonic

**Key words:** glaucoma, IOP, beta blockers, dog, pharmacotherapy

## **Evaluation of Monocyte/HDL, CRP, CBC, Total Protein/Albumin and ALP Levels in Cats with Periodontal Disorders**

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### **Abstract:**

In this study, 30 cats of different breeds and both sexes, 3-5 years old and naturally developed periodontal disorders (calculus and gingival disorders), were used. In the clinical examination of the mouth, the teeth were evaluated for plaque and tartar formation, and the gums were evaluated for signs of inflammation, bleeding and gingival pocket development. In the study, cats that were negative for FIP, FeLV and FIV diseases in serological examinations using ELISA rapid test kits were used. Cats were semi-quantitatively scored and classified according to visual clinical examination findings of periodontal disorders. Accordingly, the control group of 10 cats with no clinical signs of periodontal disorder; 9 cats with mild clinical signs of periodontal disorders constituted the mild patient group, and 11 cats with moderate-to-severe clinical signs of periodontal disorders constituted the severe patient group. CBC, serum Procalcitonin, CRP, total protein, albumin and ALP levels, and monocyte/HDL ratio were determined in blood samples taken from the anterior vena cephalica antebrachii of cats. In comparisons with the values determined in cats in the control group and mildly ill cats; It was noted that the serum procalcitonin, CRP and total protein/albumin values determined in severely ill cats were statistically significantly higher. As a result, the significant increase in systemic inflammation parameters in cats with moderate to severe periodontal disorders; It has been concluded that possible disorders that may occur in organs other than periodontal tissue in the medium and long term are a situation that should be emphasized by clinical veterinarians and research veterinarians.

**Keywords:** feline, periodontal disorders, procalcitonin, crp

## Investigation of Serum Homocysteine and Nitric Oxide Levels in Turkish Van Cats with Feline Infectious Peritonitis

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### Abstract:

This study was performed to evaluate serum homocysteine and nitric oxide levels in cats with Feline Infectious Peritonitis and present biochemical and clinicopathological alterations related to the disease. The material of this study consisted of 30 Turkish Van Cats of different ages and genders with Feline Infectious Peritonitis that were definitely diagnosed by post-mortem examinations and immunohistochemistry. The control group consisted of 6 healthy Turkish Van Cats of different ages and genders that were brought for routine clinical examination. Cats in the study group had clinical findings such as loss of appetite, weight loss, high fever, persistent fever, jaundice, dehydration, vomiting, respiratory system symptoms, anemia, nervous findings, uveitis, and ascites. These cats were monitored and following the death, post-mortem examinations were performed and cases with a definitive diagnosis were included in the study. Among the cats consisting study group, while 25 had the dry form of the disease, 5 had wet form. According to the hematological results, there was a statistically significant reduction in platelet counts. The biochemical results showed statistically significant alterations that creatinine, aspartate aminotransferase, alkaline phosphatase, creatine kinase myocardial band, homocysteine, and nitric oxide concentrations were higher than the control group. Besides albumin concentrations were lower and the albumin/globulin ratio was 0.53. As a result; this is the first detailed study in Turkish Van Cats with Feline Infectious Peritonitis that evaluated clinical, hematological, biochemical, and pathological findings. Furthermore, serum homocysteine and nitric oxide levels were evaluated for the first time in cats with vasculitis which is the most important complication of the disease. It is concluded that the evaluation of serum homocysteine and nitric oxide concentrations in Feline Infectious Peritonitis may assist the antemortem diagnosis of the disease.

Keywords: cats, feline infectious peritonitis, homocysteine, nitric oxide, vasculitis

<sup>#</sup>This study was funded by Van Yuzuncu Yil University, Presidency of Scientific Research Project (Project No: TSA-2017-5941). We thank to Van Yuzuncu Yil University, Presidency of Scientific Research Project for their contribution to the study.

## **Phimosis and Penile Necrosis In A Cat**

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### **Abstract:**

A 3-year-old domestic shorthair cat was presented with a history of anuria and licking the narrowed preputium. The cat's case history was due to not wearing an Elizabethan collar after spaying, and in addition, phimosis was identified. It was noted that the cat could not urinate despite the frequent urge to urinate, and therefore licked the narrowed part of the preputium. The preputial part was enlarged by traction with the aid of curved-fine-tipped hemostatic. After enlargement, the glans penis was reached. It was determined that necrosis occurred in the glans penis, which was due to licking this area. In addition, it was noted that part of the penis was rejected and the urethral cavity narrowed. The urethral prolapse occurred in the part of the orificium urethra externa and the urethral prolapse in this part was removed. Then, a catheter was placed into the penis. Urination was achieved by the insertion of the catheter. A case of hematuria was detected in the cat while urinating. According to the urine sample taken, it was noted that the cat had cystitis. In the postoperative treatment; antibiotherapy, nonsteroidal anti-inflammatory drug (NSAID), a permanent urinary catheter for 5 days, and Hill's Prescription Diet C/D Urinary Stress food were used. The patient recovered with these treatment methods.

**Keywords:** phimosis, traction, cat

## **Ocular Manifestations in Feline Infectious Peritonitis in Cats**

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### **Abstract:**

Feline infectious peritonitis (FIP) is a fatal, immune-mediated disease caused by a virulent and mutant form of feline coronaviruses. Feline Corona Virus (FCoV) has been reported to have more than one serotype. There are also two different biotypes, Feline Infectious Peritonitis virus (FIPV) and Feline Enteric Corona Virus (FECV). Cats that are exposed to extreme stress or have an immunosuppressive disease, foods and items contaminated with feces are effective in the transmission of this disease. Very young or old cats are also at risk, with cats younger than 1 year at the highest risk. Ocular findings of FIP include anterior uveitis, choroiditis, panuveitis due to fibrin deposition in the anterior chamber, retinal vasculitis (perivascular infiltration of leukocytes), retinal rupture. FIP has a characteristic finding. This characteristic finding is that keratin deposits made up of macrophage and other inflammatory cells are concentrated on the posterior surface of the cornea and appear as a "sheep fat" precipitate. Another important finding in animals infected with FIP is; It is Horner's Syndrome which causes anhidrosis, miosis, enophthalmos, ptosis and heterochromia formations. Tertiary eyelid closure is a typical finding in this syndrome. FIP is the most difficult to diagnose disease among feline diseases. In this case thought to be because that the pathogenesis of FCoV infection is still not fully known. FIP can be diagnosed based on macroscopic and microscopic applications of non-ocular findings (pleural or peritoneal fluids). FIP can also be diagnosed with IFAT (Immunofluorescence antibody test) and RT-PCR (Reverse transcription polymerase chain reaction) tests. In the treatment, there is no specific treatment method for FIP yet. But the combined application of cat interferon and corticosteroids has a positive effect on the treatment. In the protection, a high level of hygiene, quarantine, and immunoprophylactic measures should be taken.

**Keywords:** FIP, uveitis, myosis, panuveitis, anterior uveitis

## Comparison of Histopathological, Immunohistochemical and Real-Time PCR Methods for Diagnosis of Listeriosis in Ruminants with Encephalitis<sup>#</sup>

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### Abstract:

Encephalitic listeriosis is the most significant purulent encephalitis in ruminants and is a very common endemic problem in sheep, cattle, and goats all over the world. In this study, it was aimed to compare the presence of *Listeria monocytogenes* (*L. monocytogenes*) revealed by immunohistochemical (IHC) and Real-Time PCR methods with histopathological findings obtained from the archive materials. The study material consisted of pons and medulla oblongata paraffin tissue of 100 ruminants (9 cattle, 4 calves, 44 sheep, 38 lambs, and 5 goats). Positivity was obtained by the IHC method in 46 (46%) and by the Real-Time PCR method in 21 (21 %) of 100 cases. In the *L. monocytogenes* antigen IHC scoring, more severe staining was observed in sheep and goats ( $p>0.05$ ). In the IHC positive cases, histopathologically, microabscess was more severe in sheep and goats than in cattle and lambs ( $p<0.05$ ). The perivascular cuffing was not statistically significant among cattle, sheep, goats, and lambs ( $p>0.05$ ). In addition, 19 patients had coenurus cerebral cysts, and 3 of them were found to be positive for the IHC agent of listeria. 19 of the 33 cases that were found to be positive at moderate and severe per the IHC scores were also determined as positive by the PCR method. It was concluded that IHC and PCR methods can be used to detect *L. monocytogenes* from paraffin blocks, but the IHC method is a more effective method than PCR in revealing the presence of antigen from paraffin blocks stored for many years.

Keywords: Listeriosis, Immunohistochemistry, Real-Time PCR, Ruminants

<sup>#</sup> The study was supported by Selcuk University Scientific Research Projects Coordinatorship (BAP) (Project No: 15401064).

## **Effect of Fluid-Electrolyte Therapy and Oxygen Application on Venous Blood Gases in Diarrheic Calves with Hyperkalemia**

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### **Abstract:**

Diarrhea is one of the most important problems of cattle industry in our country as well as all over the World and most frequently seen in the neonatal period (3-4 weeks after birth) in calves. The purpose of this study was to compare the effects of routine diarrhea treatment and fluid-electrolyte treatment, as well as oxygen therapy in addition to these treatments, on clinical, hematological, biochemical and venous blood gases in diarrheal calves with hyperkalemia. The animal material of this study consisted of 20 calves with different ages (1-90 days), races and gender that were brought to Van Yüzüncü Yıl University, Faculty of Veterinary Medicine, Department of Internal Medicine. Diarrheic calves, whose serum potassium (K) level was above 6 mmol/L according to the results of the analysis were included in the study. The animals were divided into two groups, routine diarrhea treatment was administered to the animals in the first group, and oxygen treatment was administered to the animals in the second group in addition to the routine diarrhea treatment. At 0th, 5th and 24th hours of the study, clinical findings of calves were recorded and hematological, blood gas and biochemical analyzes were performed. As a result; It has been determined that oxygen administration in addition to routine diarrhea treatment may have positive effects on pH, pO<sub>2</sub>, pCO<sub>2</sub>, sO<sub>2</sub>, K. According to the results obtained in this study, it was determined that oxygen therapy would be beneficial in calves with diarrhea and hyperkalemia, however it was concluded that usage of more animals in a larger study would lead to obtain more significant results. It is thought that this study will shed light on future studies in calves with diarrhea.

**Keywords:** calf, diarrhea, hyperkalemia, oxygen, potassium.

# This study was funded by Van Yuzuncu Yil University, Presidency of Scientific Research Project (Project No: TYL-2019-8160).

## **Gastrointestinal Linear Foreign Bodies in Cats**

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### **Abstract:**

Gastrointestinal foreign bodies are common in animals and may present with various clinical manifestations depending on the location, severity, and duration of the obstruction. Linear foreign body obstructions are more common in cats compared to dogs, and the foreign body causing the obstruction is usually thread or thread-needle. In our study, it was aimed to determine the radiography and the localization of the obstruction in the diagnosis of linear foreign body in cats, to investigate the operative treatment options and their effects on the prognosis. The study material consisted of 10 cats of different breeds, ages, and genders, who were referred with the suspicion of foreign body with acute/chronic vomiting and anorexia. After the identification of the foreign body causing the obstruction, treatment was planned considering its localization, severity and duration of pathology. All foreign bodies encountered in our study were strings. It was determined as needle-thread in only one case. All foreign bodies were removed operatively by gastrotomy, enterotomy and/or resection/anastomosis following laparotomy. The most common finding after laparotomy was the appearance of plication in the intestines. Two cats died in the postoperative period. As a result, early and rapid diagnosis in linear foreign bodies; It positively affects the prognosis in the post-op period. Pathologies caused by linear foreign body and secondary infection should be avoided in delayed cases. Another issue to be considered is that in cats that show symptoms of gastrointestinal system origin, such as vomiting, decreased appetite, and irregular defecation in general, it is extremely important to carry out a detailed examination of the mouth, and even if the conditions are suitable, this examination should be performed under sedation.

**Keywords:** cat, foreign body, linear, gastrointestinal, vomit.

*Oral Presentation*

## **Some blood macro (Ca, K, Mg, Na, P) and micro (Al, B, Mo, Se, Mn, Sb, Sn, Tl) element status and correlations in shelter dogs from northwest Turkey**

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### **Abstract:**

Elements, which have an important role in the nutrition and healthy development of living things, are divided into two as macro and micro, according to their amounts. Some (Cu, Fe, etc.) are necessary for various biological activities, while some (Cd, Pb, etc.) are not. In addition to the deficiencies of the essential ones, their levels above the tolerable limits cause negativities, whether essential or not. Therefore, monitoring the blood levels of macro and microelements; is extremely important to determine the diseases and toxic effects that may be associated with possible deficiency or excess. In addition, these elements can change effects (especially in the toxic direction) because they interact with each other and some substances (especially drugs). Therefore, it is necessary to determine reference ranges in order to determine the biological functions and to understand their interactions. For this purpose, 13 macro (Ca, K, Mg, Na, and P) and micro (Al, B, Mn, Mo, Sb, Sn, and Tl) element concentrations were investigated in 140 whole blood samples collected from physically healthy dogs of different ages and sexes from the Thrace region, Turkey. According to the study findings, concentrations were ranked as  $K > Ca > P > Mg > Na$  for macroelements and as  $Se > Al > Mn > B > Mo > Sb > Sn > Tl$  for microelements. The determined concentrations of the macroelements are within the reference limits. Statistically significant correlations (positive, negative) between elements were determined. Reference biomarkers should be determined for the early diagnosis of changes caused by the elements and their effects on health should be examined in more detail. In the conclusion, the present study will draw attention to the importance of this subject and data will be a reference for future studies.

**Keywords:** dogs blood, microelements, macroelements, Thrace region, Turkey

This work was financially supported by Scientific Research Projects Coordination of Tekirdağ Namık Kemal University (Project no: NKUBAP.10.GA.17.124).

## **A Gunshot Injury in a 5-Year-Old Dog**

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### **Abstract:**

The material of this study was a 6-year-old crossbred stray dog weighing 9 kg. An animal lover brought the dog to our clinic. In the anamnesis, it was learned that the animal had vomiting reflex, cough and lameness. Blood was taken from the animal for hematological examination. Abdominal region was examined with ultrasound. In the blood analysis, everything was within physiological limits. Since the body temperature was a little high, fluid therapy and antibiotic administration were performed on suspicion of infection. After about a week of treatment, no results could be obtained, so it was decided to x-ray the animal. At the end of the radiological imaging, dozens of bullshits were detected in various places where the animal was shot with a firearm. It was thought that these symptoms were caused by the startles in the tissues and organs hit by the bullshit. It was thought that the bullshits had been in the animal's body for a long time, all of them were in encysted, and some of them, especially those that hit the pharynx and larynx area, still startled the area and the symptoms continued because of this. The animal was treated with a symptom-correcting protocol. As a result, it was thought that such firearm injuries should be considered in cases with very different symptoms.

**Keywords:** Dog, Firearm, Injury, Radiological imaging

## **A Case of Complicated Orchitis in a German Wolfhound**

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### **Abstract:**

The material of this study was 8 years old, 35 kg, male German wolfhound. The owner of the animal came to the clinic about six months ago with the complaint that the testicles were abnormally swollen, treated by a veterinarian, although it shrunk a little, it has not completely healed, there has been excessive swelling and tissue deterioration recently, which affects the animal's gait and comfort. In the examination, it was observed that an abnormal swelling was formed in only one of the testicles and atrophy was formed in the other. Congestion areas were determined in various parts of the scrotum. It was decided to castration. The animal was anesthetized with Xlazine hydrochloride (1cc/10 kg) and ketamine hydrochloride (10 mg/kg). The scrotum was incised until the testis was taken out. When the tunica vaginalis was opened, a large amount of bloody fluid came out. In accordance with the rule, a ligature was placed on the finuculus spermaticus and the testicles were cut and taken out. The removed testicle was sent to the pathology laboratory for examination. The pouch was closed with simple separate sutures. Macroscopically, the mass was 12.5x10x7 cm in size and had a hard consistency. When the section was made, it was observed that a large amount of blood leaked. On the cut section, large dark-red colored blood clots, grayish-white colored loose structures including porous structures, and areas with hard consistency in places were noted. This case was found interesting because of its long duration and resistance to treatment.

**Keywords:** Orchitis, Castration, Pathology, Dog

## **Investigation of Tumor Microenvironment, Hypoxia and Angiogenesis by Immunohistochemical and Histopathological Methods in Canine Mammary Tumors<sup>#</sup>**

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### **Abstract:**

Tumor microenvironment (TME) is an important component for tumor behaviour in several cancers in human beings. However, little information regarding role of TME in canine mammary tumors (CMTs) is available compared to humans. In this study, it was aimed to investigate relationship between TME, hypoxia and angiogenesis through CD31, VEGF, HIF-1a, CD68 and CD163 expression by using immunohistochemical (IHC) method in formalin-fixed paraffin-embedded canine mammary tumor (CMT) samples [(n = 34: malignant (n = 28) and benign (n = 6)], to compare them with clinicopathological features of tumors and to analyze the relationship between them. There was no significant relationship between CD31, VEGF, HIF-1a, CD68 and CD163 expression in malignant ones compared to benign tumors ( $p > 0,05$ ). There was an association between microvessel density (MVD) and clinicopathological variables (the tumor size  $P = 0.013$ , presence of necrosis  $P = 0.022$ ) and individual histological grade (G2 vs. G3  $P = 0.028$ ) in malignant tumors. While there was a positive correlation between CD68 and CD163 in the malignant tumors of dogs ( $p < 0,01$ ), no correlation was determined between other antibodies. Immunohistochemical determination of angiogenesis in tumor microenvironment may give further useful information about the angiogenic potential and grading the clinical aggressiveness of some CMTs.

**Keywords:** Angiogenesis; canine mammary tumors; tumour-associated macrophages; tumor microenvironment,

<sup>#</sup> This research was funded by Selcuk University, Coordination of Scientific Research Projects with the project number 18202064, and it is a summary of a part of Erdinc Guner's dissertation

## **The Cranial Cervical Ganglion and Its Branches in The Alabai Dog**

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### **Abstract**

The aim of this study was conducted to reveal the location and branches of the cranial cervical ganglion (CCG) of the Alabai dog breed. This aim was achieved by performing bilateral macroanatomical dissection in a dog. In result of dissection, CCG was located medial and ventral of the jugular process extremity, ventral of the atlas and lateral to the longus capitis muscle. It was observed that the jugular nerve and internal carotid nerves were originated from the cranial part of CCG in the Alabai dog, while the external carotid branches were left the caudal part of the ganglion. In additional, it was seen that the central part of CCG gave thin nerve branches the various anatomical structures including the wall of the pharynx, accesory nerve, vagus nerve, hypoglossal nerve, first and second cervical nerve. In conclusion, compared with literature data, we found differences in the number of the branches ramifying from the CCG of Alabai dog breed.

**Keywords:** anatomy; cranial cervical ganglion (CCG); alabai dog

## **A Case of Crystallized Corneal Dystrophy in A Siberian Husky**

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### **Abstract:**

The material of this case report is a 2 years old Siberian Husky male dog brought to Burdur Mehmet Akif Ersoy University Veterinary Faculty Animal Hospital Surgery Department. AS a result of ophthalmological examinations, the patient was diagnosed with SHKGD and glaucoma. Medical treatment was started with dorzolamid+timolol (Tomec®, Abdiİbrahim) and viscotears. Crystallized corneal dystrophies are a recessive genetic disorder in Siberian Huskies. In this form of dystrophy, there are peripheral or horizontal, oval, diffuse, gray homogeneous turbidity. Polychromatic crystals are located in the anterior or antero-posterior stroma. The cornea is not inflamed and usually occurs within 5 to 27 months. SHKGD occurs in five different clinical presentations that follow each other. In the first and earliest period, reflecting polychromatic crystals develop in the posterior stroma region close to the descemet membrane. In the latter, lacy aggregations and crystalline condensations are observed in the anterior and posterior stroma, with gray-brown, homogeneous, unaffected corneal stroma in between. In the third example, there are gray-brown homogeneous deposits in the anterior stroma. In the fourth form, accumulations involving the posterior 2/3 of the posterior stroma attract attention. In the fifth form, gray-brown deposits are observed that affect the entire entrance of the corneal stroma.

**Keywords:** Ophthalmology, Glaucoma, Stroma, Treatment, Dog

## **First Report of an Unusual Monteggia Equivalent Fracture and Its Surgical Treatment in a Cat**

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### **Abstract:**

Orthopedic surgical treatments on the elbow are challenging due to the complex anatomical structure. Among them, Monteggia fractures are special fractures that are rare. Although there are defined types for Monteggia fractures, there may be unusual Monteggia variant or equivalent fractures which are rarer. In this study, the aim was to report an unusual Monteggia equivalent fracture for the first time, that has not been described previously in a cat, and its treatment. A male Bombay cat (5-year-old, 4.5 kg, intact, cryptorchid) was brought to Hatay Mustafa Kemal University Veterinary Health Research and Practice Hospital with a history of high fall and fractures of both forearms one day ago. As a result of clinical examination and radiographs, ulnar fracture accompanying craniolateral elbow dislocation was determined bilaterally. This atypical fracture-dislocation was determined to be an unusual type of Monteggia equivalent fracture. After stabilization of the patient was achieved, open reduction was performed on both legs with a surgical approach. In surgical open reduction, ulnar fractures were fixed with Kirschner wire, locked mini titanium plate and screws; then elbow dislocations were fixed with two screws and orthopedic wire by lateral stabilization method. Due to the infection in the postoperative period, lateral stabilization of the right elbow was a failure on the seventh day and revised by reoperation. Despite the delayed union due to infection in the ongoing process, adequate fracture healing was achieved in 6 months with medical treatment and supplements with continuous check-ups. By examining previous studies, it was determined that this fracture was not classified as known Monteggia types due to ulnar fracture accompanying cranio-lateral elbow dislocation. Though there are reports of elbow dislocation along with diaphyseal forearm bones fractures, to authors knowledge, this is the first in which the elbow dislocation is cranio-lateral and an ulnar fracture is also associated. In conclusion, with this study, a unique Monteggia equivalent fracture of a cat that has not been reported previously and its surgical treatment was presented.

**Keywords:** cat, dog, surgery, orthopaedics, veterinary.

*Oral Presentation*

## **Evaluation Of Oxidative Stress Parameters And Serum Immunoglobulin Levels In Calves With Enzootic Pneumonia**

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### **Abstract:**

The purpose of this study was to evaluate oxidative stress parameters [total oxidant status (TOS), nitric oxide (NO), malondialdehyde (MDA), sialic acid (SA), total antioxidant status (TAS), superoxide dismutase (SOD), glutathione peroxidase (GPx), catalase (CAT), oxidative stress index (OSI)] and immunoglobulin [immunoglobulin A (IgA), immunoglobulin G (IgG), immunoglobulin M (IgM)] levels in calves with enzootic pneumonia. The animal material of this study consisted of 80 calves with different breeds and genders that were 2-6 months, and diagnosed as “enzootic pneumonia” according to anamnesis and clinical examinations. The control group of the study consisted of 10 healthy calves with same age group, different breed and genders that did not have any disease according to clinical examinations. Clinical findings of these calves were recorded. Blood samples were obtained from these calves in order to perform hematological and biochemical analyses. According to biochemical analyses, oxidative stress parameters such as TOS, NO, MDA, SA and OSI were higher in calves with enzootic pneumonia than the control group. While increase in NO and OSI levels was not significant, there was a statistically significant increase in TOS, MDA and SA levels. In the study, other measured oxidative stress parameters such as TAS, SOD, GPx and CAT were lower in calves with enzootic pneumonia than control group. Decreases in these parameters were statistically significant. Immunoglobulin levels such as IgA, IgG and IgM levels were lower in calves with enzootic pneumonia than control group. However these decreases were not statistically significant. As a result, it is concluded that oxidative stress has severely developed in calves with enzootic pneumonia and oxidative stress might have contribution on disease progression, and decreases in immunoglobulin levels might also have impacts on the occurrence of the disease. Besides, it is thought that performing antioxidant administration and boosting immune system of calves will reduce the occurrence risk of enzootic pneumonia in calves.

**Keywords:** calf, enzootic pneumonia, immunoglobulin, oxidative stress

<sup>#</sup>This study was supported by Van Yuzuncu Yil University, Presidency of Scientific Research Project (Project No: TDK-2017-6235). We thank to Van Yuzuncu Yil University, Presidency of Scientific Research Project for their contribution to our study.

### **A Case of Chelio Coritis Purulenta in Horse**

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#### **Abstract:**

The material of this case consisted of 3 old Polish horses brought abroad. The complaints of lameness, restlessness, loss of appetite and weight loss were taken as anamnesis. Sensitivity was detected in various parts of the base of the animal in the controls made with the hoof examination forceps. An x-ray of the foot was taken and the nail fixed. The base was scraped with rennet until it reached the diseased area from the sensitive areas. The focus of infection has been reached. It was observed that an inflammatory discharge came from the opened area. The involved claw was wet compresses with antiseptic. It has been renewed three times, every three days. Both local and parenteral antibiotics were administered. After approximately one month of treatment, it was observed that the sensitivity in the sole disappeared. It was determined that the restlessness and loss of appetite of the animal also disappeared. After it was concluded that there was complete recovery, appropriate horseshoes were nailed and foot care was recommended routinely. As a result, early diagnosis and appropriate treatment can be successful in foot diseases in horses. However, as always, it should be known that care and protection measures are also very important.

**Keywords:** Horse, Foot, Purulent Chelio Coritis, Treatment

## **A Stereological Study on the Temporal and Parietal Region of the Brain in Male Rats with Epilepsy applied by Pentylenetetrazole (PTZ)**

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### **Abstract:**

Epilepsy is defined as recurrent, spontaneous seizures originating from abnormal electrical activity in the brain. These seizures are manifested by motor, sensory, autonomic or psychic symptoms together with or separately from the change in consciousness. These symptoms seriously affect the patient's quality of life. In this study it is aimed to investigate the effects of experimental epilepsy induced by PTZ on the temporal and parietal regions of the brain with stereological methods. In the study, 20 adult male Wistar Albino rats, 3 months old, with an average weight of 250 g were used. Control and PTZ groups were formed, with 10 animals in each group. While no application was made to the control group, a single dose injection was performed intraperitoneally by mixing 80 mg/kg PTZ with 0.5 ml 0.9% saline into the PTZ group. As a result of the observation for 30 minutes after the injection, 6 behavioral change stages of the Racine scale were detected. All rats belonging to the control and PTZ groups were perfused by opening the under 50 mg/kg ketalar anesthesia. The brains of all rats of both groups were removed and appropriate follow-ups were made for light microscopic examinations. Photographs were taken using light microscopy from sections stained with hematoxylin-eosin dye. Total volume, substantia grisea volume and neuron counts of brain tissue were calculated separately for each group using the Cavalieri Principle. Statistical values of the obtained data were calculated. "Mann-Whitney-U Test" was used to compare the measurements according to the groups. "Spearman correlation coefficients" were calculated to determine the relationships between the measurements separately in the groups. SPSS (IBM SPSS for Windows, ver.25) statistical package program was used for the calculations. No statistically significant difference was observed in the total temporal and parietal volume measurement of the brain, grey matter volume measurement and the number of neurons according to the groups ( $p>0.05$ ). But a statistically significant difference was found in the ratio of grey matter/total temporal and parietal lobe brain volume between the groups ( $p<0.05$ ).

**Keywords:** epilepsy, parietal lobe, pentylenetetrazole (ptz), stereology, temporal lobe.

This study was supported by Van Yuzuncu Yil University Scientific Research Projects Coordination Unit with the project code TDK 2020-8840.

## **Three-Dimensional Printing of Canine Femur: Anatomic Models**

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### **Abstract:**

In recent years, applications for 3D printing technology is getting important in veterinary anatomy education as a result of technological developments that have markedly reduced production costs, improved the level of accuracy of printed models, and increased the range of printable materials. This study aimed to obtain 3D printing bone models that can be an exact alternative to the real bone by using PLA and Tough PLA filaments. In the present study, a canine bone, belonging to the collection of the Ondokuz Mayıs University, Faculty of Veterinary Medicine, Department of Anatomy were used as templates for digitalization. Firstly, the bone sample was imaged by computed tomography (CT) scanning and then images were recorded in DICOM format. The resulting images were transformed into 3D models using the 3D Slicer software, then saved to “.stl” format. The final digital 3D images were printed from Fused Deposition Modeling (FDM) Creality Ender3 V2 (Shenzhen, Çin) brand printer using white-colored PLA and Tough PLA filaments (Porima, Turkey). The printing time for each femur was approximately from 9 to 10 hours. The printed femoral bone models were the same size as the original bone and all the models have obtained good anatomical details. Thus, 50% lighter and more durable thigh bone models were created as same as the original bone, using 3D printing technology. Furthermore, we compared models formed with two different filaments, the PLA and Tough PLA filaments, by means of durability and weight. While the durability of the femur model formed with Tough PLA filament was higher than PLA filament, their weights of them were the same. In conclusion, we suggest to using Tough PLA filament for creating durable bone models in 3D printing technologies.

**Keywords:** Anatomy, Femur, Dog, Three-dimensional, Veterinary.

## Morphological Investigation of Roe Deer (*Capreolus capreolus*) Tongue

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### Abstract:

The tongue, localized at the floor of the oral cavity, is a muscular organ with important vital functions such as grasping food, tasting, swallowing and making sounds. The morphological structure of the tongue and the lingual papillae vary according to the animal's lifestyle, nutrition, and adaptation to various environmental conditions. With this study, we aim to determine the morphological structure of the roe deer (*Capreolus capreolus*) tongue. Five tongues of roe deer with an average 25-30 kg weight were used. After the tongues were carefully dissected, their morphometric measurements were taken with a digital caliper. Afterward, parts of the materials were subjected to routine histologic procedures, embedded in paraffin blocks, and preparations stained with Crossman's triple staining technique. The tongue, ventrally connected to the oral base by the frenulum linguae, was composed of three parts: the apex, body and root. The total length of the tongue was  $114.41 \pm 16.84$  mm. The apex, body and root widths were determined as  $24.57 \pm 3.68$  mm,  $26.10 \pm 3.49$  mm and  $23.68 \pm 3.14$  mm, respectively. There was an evident median groove on the dorsal surface of the apex of the tongue. It was measured approximately  $30.57 \pm 7.91$  mm. The mucous membrane of the tongue was provided with a variety of lingual papillae; filiform, fungiform, conical and vallatae. There were papillae filiformes on the dorsal and ventrolateral surfaces of the apex and body of the tongue, and the papillae fungiformes were located between these papillae. The dorsum of the body of the tongue is divided by a transverse groove (fossa linguae) into a rostral flat part and a caudal raised part called lingual torus (torus linguae), which serves to press the food to the palate. The height of the torus linguae was approximately  $24.31 \pm 2.30$  mm. The papillae conicae, fungiformes, vallatae were observed on the torus linguae. As a result, this study represents the anatomical description of the tongue and lingual papillae of the roe deer, which has an important place in wildlife. It is thought that these findings will contribute to the anatomy literature.

Keywords: Anatomy, Tongue, Roe Deer, Papillae

## **Silicone plastination of longitudinally sectioned sheep head**

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### **Abstract:**

Plastination is an anatomical technique that aims to preserve biological materials for education, training, and research. Plastinated models increase knowledge and skill, make students easily understand the anatomy, meanwhile reduce the use of animals in education and research. The study aimed to produce a silicone plastinated model of a longitudinally sectioned sheep head for practical teaching. The four standard stages of silicone plastination methods were used. The formalin-fixed longitudinally sectioned sheep head was dehydrated in acetone. Following the dehydration stage, forced impregnation was done using a vacuum chamber and finally, the specimens were hardened by gas curing with S6. The final specimens were stored in dehumidified air-tight bags. Normal anatomy structures found on the longitudinally sectioned sheep head were preserved well. Specially, anatomical structures like nasal cavity, oral cavity, pharynx and larynx were clearly seen. Produced specimens were dry and odorless which are useful as an adjunct for demonstration of prosected specimens. In conclusion, silicone plastination method can be easily used to prepare the specimens of longitudinally sectioned of sheep head to be used in veterinary teaching.

**Keywords:** Silicone Plastination, Teaching, Sheep head.

*Oral Presentation*

## **Criticism of Rembrandt's "Dr. Tulp's Anatomy Lesson" and "Dr. Deijman's Anatomy Lesson"**

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### **Abstract:**

It is a fact that under the bombardment of visual culture in today's social life, it is unacceptable for the content of Visual Art Education courses to be lacking in aesthetic expression and the meaning of aesthetics. When we look around, we feel the lack of aesthetic education in our general education system. Irregularities in architectural structures, colorfully painted houses according to everyone's own liking, green areas turned into concrete, irregular advertising signs in various sizes, etc., as well as the increase in demands for bad taste products are examples of the lack of aesthetic education in this evaluation. In this study, "Dr. Tulp's Anatomy Lesson" and "Dr. Deijman's Anatomy Lesson", the artist's life, artist identity, group portraiture and many other stylistic features of the artist will be revealed. We will examine the artist's great mastery in the art of portraiture, his use of paint technique, as well as his success in capturing people's moods. In Rembrandt's works named anatomy lessons, the artist's brush conveys much more to the audience than what a superficial analysis reveals and seems. "Deijman's Anatomy Lesson" is the most precise of the most famous neuroanatomical images in art history. Again, the artist's "Dr. Tulp's Anatomy Lesson" is considered a masterpiece in the history of art. In addition, these pictures enable us to analyze and think about our historical knowledge about developments in medical science. In this study, we will use the literature review and artwork analysis method.

**Keywords:** Rembrandt, Painting, Anatomy, Cadaver, Art

*Oral Presentation*

## **Chrysin Alleviates Gastric Toxicity Caused by Lead Acetate by Showing Anti-oxidant and Anti-inflammatory Effects <sup>#</sup>**

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### **Abstract:**

Lead (Pb), one of the leading causes of environmental pollution, is a heavy metal leading to toxicity in various tissues. Chrysin (CHR) is an important flavonoid with many biological and pharmacological properties. The present study evaluated the potential protective effects of CHR against lead-acetate (PbAc)-induced gastric toxicity. For this purpose, 30 mg/kg PbAc was administered 30 minutes after 25 or 50 mg/kg CHR was administered to male Sprague- Dawley rats for 7 days. Afterwards, mRNA transcript levels of nuclear factor erythroid 2-related factor 2 (Nrf2), heme oxygenase 1 (HO-1), mitogen-activated protein kinase 14 (MAPK14), nuclear factor kappa-B (NF-κB), interleukin-1 beta (IL-1β), tumor necrosis factor alpha (TNF-α), cyclooxygenase-2 (COX-2) and inducible nitric oxide synthase (iNOS) in gastric tissue were analyzed by RT-PCR method. The obtained data showed that PbAc triggered oxidative stress by suppressing Nrf2 and HO-1 expressions in gastric tissue. In addition, it was determined that PbAc caused inflammation in the stomach tissue by up-regulating the expressions of MAPK14, NF-κB, IL-1β, TNF-α, COX-2 and iNOS. However, it was detected that Nrf-2 and HO-1 mRNA transcript levels increased significantly in the stomachs of rats treated with CHR, and CHR given 50 mg/kg was more effective on these genes. On the other hand, MAPK14, NF-κB, IL-1β, TNF-α, COX-2 and iNOS genes were down-regulated after CHR treatment. Another finding is that the high dose of CHR is more effective against inflammation. Taken together, the results revealed that PbAc could cause damage by generating oxidative stress and inflammation in the stomach tissues of rats whereas CHR treatment could protect the stomach tissue from the destructive effect of PbAc.

**Keywords:** chrysin, gastric toxicity, lead-acetate, inflammation, oxidative stress.

## **Evaluation of Protective Effect of Naringin in Oxaliplatin Induced Cardiotoxicity via Apoptosis and Endoplasmic Reticulum Stress Pathway**

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### **Abstract:**

Chemotherapy is a common treatment primarily used for various types of cancer. However, it can also cause side effects such as cardiotoxicity in cancer patients. Oxaliplatin (OXL), a third generation platinum-based chemotherapeutic agent, is widely used in certain cancer types such as colorectal, prostate and testicular cancer. So, this study is aimed to examine potential protection of naringin (NRG), which is a well-known antioxidant, in oxaliplatin-induced cardiotoxicity. For this purpose, 35 Sprague Dawley male rats were randomly divided into 5 groups; Control: Rats were given 5% dextrose solution on the 1st, 2nd, 5th and 6th days, NRG: 100 mg/kg NRG was given orally to the rats on the 1st, 2nd, 5th and 6th days, OXL: 4 mg/kg oxaliplatin was injected to rats i.p. on days 1, 2, 5 and 6., OXL+NRG 50: On the 1st, 2nd, 5th and 6th days, rats were injected with 4 mg/kg OXL i.p. 30 minutes after 50 mg/kg NRG was given orally, OXL+NRG 100: On the 1st, 2nd, 5th and 6th days, rats were injected with 4 mg/kg OXL i.p. 30 minutes after 100 mg/kg NRG was given orally. At the end of the experiment the rats' were decapitated under mild sevoflurane anesthesia and heart tissue were removed. Apoptosis and endoplasmic reticulum (ER) stress markers were analyzed in the obtained tissues by Real Time PCR method. The results showed that while Bcl-2-associated X protein (Bax) and caspase-3 increased in OXL-induced cardiotoxicity, B-cell lymphoma 2 (Bcl-2) decreased, whereas NRG application brought the values of these parameters closer to the control group. While activating transcription factor 6 (ATF6), Protein kinase RNA-like endoplasmic reticulum kinase (PERK), inositol-requiring enzyme 1 alpha (IRE1 $\alpha$ ) and binding immunoglobulin protein (GRP78) increased in OXL administered rats, NRG co-administration cause decreasing in ER stress. The findings of this research suggest that NRG has a protective role for OXL induced cardiotoxicity.

**Keywords:** Oxaliplatin, Naringin, Cardiotoxicity, Apoptosis, Endoplasmic Reticulum Stress.

## Obtaining and Research of Antibacterial Acrylonitrile-Butadiene-Styrene (ABS) Polymer Composite Materials

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### Abstract:

It is known that the antibacterial properties of polymer materials used in medicine, agriculture, household products and many other fields are considered to be one of the most important conditions. One of the technologies for the production of this type of polymer materials is the inclusion of natural and synthetic antimicrobial additives in polymer composite materials during processing. Many organic and inorganic compounds, oligomers and polymers are used in antibacterial additives, and there are many requirements for these additives, one of which is that they must be harmless to humans. From this point of view, salicylic acid and its derivatives, as well as oligomers containing a salicylic group, are of great interest. In our previous studies, antibacterial PE composite materials were obtained using allyl and vinyl esters of acetylsalicylic acid from biopolymers as a biocidal additive. It was found that composite materials containing the obtained salicylic group have high antibacterial properties. In the presented work, the physicomechanical and antibacterial properties of antibacterial composite materials (CM) based on ABS (acrylonitrile-butadiene-styrene copolymer) were studied using salicylic acid as an antibacterial additive. Composite ABS material is a substance with a viscosity of 180°C, containing 30% ABS copolymer (acrylonitrile-butadiene-styrene) and 70% calcite mineral (CaCO<sub>3</sub>). Primary ABS is a substance soluble in ketones, ethers, acetone, 1,2-dichloroethane and ethyl acetate. The composition of the obtained composite materials is as follows: To prepare composites, acrylonitrile-butadiene-styrene and salicylic acid with antibacterial properties are mixed and extruded at 170°C. Then it is pressed under a pressure of 15 MPa into a standard plate. Studies have shown that the addition of 0.18-0.8% salicylic acid to the ABS composite has practically no effect on its physical and mechanical properties, but increases the thermodynamic properties with an increase in the amount of additive. Micromycetes such as *Aspergillus niger*, *A.ochraseus*, *Penicillium cuclopium* and *Penicillium chryzogenum* were used as test cultures in the study of the fungicidal properties of antibacterial CMs based on ABS. The investigated composite materials were placed in a nutrient medium (bleached malt juice) for 30 days and a mushroom was grown on it. It was found that none of the tested plastic materials changed either visually or microscopically, which can be regarded as an indicator of their resistance to fungi.

Keywords: composite materials, fungi, antibacterial, micromycete.

*Oral Presentation*

## **Neuroprotective Effect of Curcumin Alleviating Cadmium Induced Neurotoxicity and Neurogenesis Through CREB-BDNF signaling in Swiss Albino Mice**

Maryam Sarwat

Abstract:

Aim of the Study: Cadmium is a non-essential transition heavy metal which has adverse effects on the central nervous system. The main pathway of cadmium(Cd) to reach the central nervous system is through nasal mucosal and olfactory pathway. The main source of cadmium in the environment is electronic industries, fertilizer companies and industrialization. Many researchers have reported that curcumin plays an important role in anti-oxidant, anti-inflammation, anti-apoptosis, anti-carcinogenic and anti-angiogenesis. Heavy metal neurotoxicity is one of the major challenge in today's era due to industries revolution. However, the knowledge of how these heavy metal causes neurotoxicity and intervention therapeutic approach is still not completely understood. In the present study, we have investigated the effect of curcumin on neuroprotection in Swiss Albino mice, especially on neurogenesis. The effects of different concentration of curcumin (20mg/kg, 30mg/kg and 50mg/kg) in Swiss Albino mice treated with Cd (2.5mg/kg for 60 days) was analyzed. We have analyzed the concentration of different proteins which are essential in the process of neurogenesis in the hippocampal region of brain which known to involve in neurogenesis. The results revealed that curcumin can reverse the adverse effects of Cd on mice brain. The brain protein concentration such as brain derived neurotrophic factor (BDNF), Synapsin II, doublecortin protein (DCX) and cyclic AMP response element binding protein (CREB) were analyzed and the results showed that there is a dose dependent upregulation of protein concentration in the brain tissue samples. It was also observed that Curcumin (50 mg/kg) has good effect on stress and anxiety relief in rodent. The increase in DCX protein along with other proteins in the brain tissue samples depict that curcumin also promotes neurogenesis. From our current study result we can conclude strongly that curcumin can reverse the adverse effect of neurotoxicity induced by Cd and it promote neurogenesis significantly.

Keywords: curcumin, cadmium, neurotoxicity, brain derived neurotrophic factor, cyclic AMP response element binding protein

## Investigation of the Mechanism of $\alpha$ -Tocopherol in Reducing Lipid Accumulation in 3T3-L1 Adipocyte via CTRP3 gene Expression

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### Abstract:

Obesity is a complicated medical condition characterized by excessive fat deposition in the body as a result of excessive food consumption and insufficient physical exercise. Obesity, which develops as a result of excessive fat accumulation, is a worldwide pandemic social problem. Adipose tissue is known as an endocrine organ and a regulator of energy homeostasis. Recently, it has been accepted that changes in the biological function of adipose tissue rather than changes in adipose tissue mass play an important role in physiological and pathological processes. The aim of this study is to investigate the role of  $\alpha$ -tocopherol in reducing fat accumulation in 3T3-L1 adipocytes via gene expression of a new adipocytokine, CTRP3. *In vitro*, 3T3-L1 fibroblast cells (ATCC® CL - 173) were differentiated into adipocyte cells. Fat accumulation in 3T3-L1 adipocyte cells was detected by oil red-o staining method. As a result of the application of different doses of  $\alpha$ -tocopherol to 3T3-L1 adipocytes, the cytotoxic activity on adipocytes was determined by MTT method. CTRP3 and PPAR- $\gamma$  gene expressions were determined with qPCR. The IC<sub>50</sub> value was found to be 104  $\mu$ g/ml after 48 hours of  $\alpha$ -tocopherol administration to 3T3-L1 adipocytes. As a result of the application of 50, 104 and 200  $\mu$ g/ml  $\alpha$ -tocopherol to 3T3-L1 adipocytes, the fat accumulation in the cells decreased in a dose-dependent manner, according to the fat accumulation analysis performed with the Oil red o staining method. As a result of administration of  $\alpha$ -tocopherol to adipocyte cells, CTRP3 expression levels were found to be higher compared to control cells. When control and adipocyte cells treated with 104  $\mu$ g/ml  $\alpha$ -tocopherol were compared, PPAR- $\gamma$  gene expression levels were found to be lower. In obese individuals, the use of  $\alpha$ -tocopherol with dietary habits or supplements may be beneficial in reducing dose-related side effects in the use of hybrid drugs in the treatment of obesity by reducing lipid accumulation in adipocytes.

Keywords: 3T3-L1 adipocyte, Obesity, Alpha-tocopherol, CTRP3, PPAR- $\gamma$

## **Analysis of the Activity of Protein Engineered Lipase Variants on Different 4-Nitrophenyl Esters**

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### **Abstract:**

Microbial enzymes are widely used in the field of biotechnology. Enzymes that catalyze many biological reactions in the cell are frequently used in different industries. Lipases, proteases, amylases and esterases are examples of important enzymes used in the industrial field. The aim of this study is to spectrophotometrically analyze the activities of lipase variants developed by protein engineering method on different nitrophenol substrates. The colored product formed as a result of hydrolysis of p-nitrophenol ester substrates by the lipase enzyme was measured spectrophotometrically at 405nm. 96-well plate reader was used for the kinetic analysis. Acetic acid 4-nitrophenyl ester, butyric acid 4-nitrophenyl ester, octanoic acid 4-nitrophenyl ester, dodecanoic acid 4-nitrophenyl ester, hexadecanoic acid 4-nitrophenyl ester substrates were used. The activity and kinetic parameters of protein engineered three different lipase variants (L1-L3) and wild-type were analyzed spectroscopically. It was determined that the  $V_{max}$  value of the L2 type lipase enzyme was 1.3 times higher than the wild type. Accordingly, it was calculated that the catalytic efficiency  $V_{max}/K_m$  value increased by 1.18 times for the L2 type. Both  $V_{max}$  values of L1 and L3 variants were calculated as 0.48 and 0.22, respectively. Although these variants have lower  $V_{max}$  than wild type,  $K_m$  values are also higher. For this reason,  $V_{max}/K_m$  values are much lower than both wild type and L2 types. The catalytic activity of the L2 type, which is one of the lipase variants developed by protein engineering, was increased compared to the wild type. In conclusion, with this study, the importance of lipase enzyme in the industry was emphasized once again.

**Keywords:** biotechnology, microbial enzyme, protein engineering, lipase, enzyme kinetic

## Isolation and Identification of a Novel *Pichia occidentalis* Strain from Fermented Plant Material

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### Abstract:

A novel yeast strain from fermented turnip beverage called shalgam produced in southern Anatolia region of Turkey was isolated upon incubation in YPD agar for 2 days at 30 °C. The DNA extraction of this yeast organism was performed using Machery-Nagel microbial genomic DNA isolation kit according to the protocols described in the manual. To quantify and DNA quality check, extracted DNA sample was loaded to Nano drop. The concentration of DNA and A260/A280 ratio achieved were 83.9 ng/μl and 2.09 respectively. Further, the DNA was amplified using the yeast specific primers for highly conserved regions of chromosome. The primers used to run PCR amplifications were as follows ITS1: TCCGTAGGTGAACCTGCGG, ITS4: TCCTCCGCTTATTGATATGC, NL1: GCATATCAATAAGCGGAGGAAAAG, NL4: GGTCCGTGTTTCAAGACGG, GACA4: GACAGACAGACAGACA and M13: GAGGGTGGCGGTTCT. Among 4 different primers used, only ITS provided specific binding to DNA which became evident in gel electrophoresis bands. The ITS amplified PCR products were first purified and sent for Sanger sequencing. The DNA fragment reads were further processed using BLAST function in NCBI. The closest hits for ITS forward and ITS reverse Sanger reads appear to be *P. occidentalis* strains although no 100% nucleotide identity achieved. This indicates that yeast organism isolated from fermented plant material shalgam is a unique strain of *Pichia occidentalis*. To better understand the metabolic potentials of this novel strain, whole genome analysis by next generation sequencing should be explored.

Keywords: *Pichia occidentalis*, fermented plant material, DNA isolation, ITS, Sanger sequencing

## **Synthesis, Characterization, Biological and Molecular Docking Assessment of Novel Ofloxacin Derivatives**

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### **Abstract:**

The resistance to the currently available antimicrobial agents is one of the greatest health concerns globally. It has been reported that pathogens developed resistant soon after their discovery such as methicillin-resistant *Staphylococci aureus*, penicillin resistant *Streptococcus pneumoniae* and vanco-mycin-resistant *Enterococci* (VRE) etc. Therefore, it becomes compulsory to search some new antimicrobial agents with different mode of action and lower molecular weight. Heterocyclic compounds aimed a lot in search for novel biologically important molecules. The present study dealt with the design of novel ofloxacin derivatives (1-7), and screened virtually for drug likeness score through molinspiration chemoinformatics software and observed that all the designed derivatives were bioactive and lying under the zone of active drug molecule. The derivatives were then synthesized and the structures were confirmed by FTIR, NMR ( $^1\text{H}$  &  $^{13}\text{C}$ ), and mass spectroscopy. The derivatives were studied for chemotherapeutic effects against bacterial and fungal strains using disc diffusion method and MTT assay against HepG2 cells. The results revealed that the derivatives represented very good antibacterial and antifungal potential and were less toxic towards the cells with the % viability of the cells in the range 75-80 % @100 $\mu\text{M}$ . Additionally, the molecular docking study was also performed to understand the interaction of the derivatives with the amino acid residues of the receptor GlcN-6P, as well as the binding energies. The findings reported that the extent of hydrogen bond formation was varying according to the presence of heterocyclic moieties. However, some of the common amino acid residues (Tyr 248, & Tyr257), were also involved in forming H-bond with the derivative with binding energies in the range of -6.7 to -7.9 kcal/mole.

**Keywords:** Ofloxacin Derivatives, Antimicrobial, MTT assay and molecular docking

Oral Presentation

## Therapeutic Application of *Zizyphus lotus* and *Ruta chalepensis* Essential Oils in Treatment of Gastroenteritis Induced by *Salmonella enterica ssp arizonae* in Wistar Rats<sup>#</sup>

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### Abstract:

The aim of this study was to evaluate the chemical composition of *Zizyphus lotus* and *Ruta chalepensis* essential oils (EOs), the oral acute toxicity, influence on the gastrointestinal microbiota and the *in vivo* anti-salmonellosis effect. The EOs were isolated using the steam distillation process, and bioactive components were identified by gas chromatography–mass spectrometry (GC-MS) analysis. Oral acute toxicity, influence on the gastrointestinal flora composition and the anti-salmonellosis effect were elucidated using *in vivo* methods on experimental animals. The GC-MS allowed us to identify 33 and 58 components in *Z. lotus* and *R. chalepensis*, respectively. Di-isooctyl phthalate (89.857%) was found to be the major compound identified in *Z. lotus*. The main compounds in *R. chalepensis* were 2-Undecanone (26.528%) followed by 2-nonanone (13.404%). The LD<sub>50</sub> of EOs was found to be greater than 5000 mg/kg. Also, no negative influence to intestinal microbiota was detected. An important decrease in *S. enterica ssp arizonae* cells achieving a bactericidal effect was recorded in rats treated with the EOs of both plants at a dose of 400 mg/kg. In parallel, an important significant ( $P < 0.05$ ) increase in lymphocytes number was observed for all tested animals. A decrease in alkaline phosphatase (ALP), amino alanine transferase (ALT) and aspartate aminotransferase (AST) levels was observed. Furthermore, a reduced blood erythrocyte sedimentation rate (ESR) was recorded in treated animals. The *Z. lotus* and *R. chalepensis* act effectively as anti-salmonellosis agents, which support the use of these plants to cure gastrointestinal infections.

Keywords: *Zizyphus lotus* (L.), *Ruta chalepensis* (L.), essential oils, therapeutic application.

<sup>#</sup> This study is financially supported by the University of Mascara (Algeria).

Oral Presentation

## Phytochemical studies on the variability of *Pinus pinaster* Aiton essential oils and evaluation of their herbicidal and antifungal activities

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### Abstract:

This study focus on the analysis of the chemical composition of the aerial parts essential oils (needles, cones and Branches) of Tunisian *P. pinaster* Aiton. and to evaluate their antioxidant activities, their inhibition toward germination and seedling growth of weeds and to assess their antifungal activities against phytopathogenic fungi. Essential oils were got by hydrodistillation and analyzed by GC and GC/MS analysis. A total of 27, 25, and 15 compounds were identified respectively in needles, cones and branches. All analyzed oils were rich in hydrocarbonated monoterpenes (32.57-90.48%).  $\alpha$ -pinene (25.11-80.95%),  $\beta$ -pinene (1.86-33.12%) and (Z)-caryophyllene (0.28-21.34%) were the dominant compounds in the volatile oils. All tested samples exhibited interesting antioxidant activities. The phytotoxicity of essential oils was evaluated against tow weeds: *Sinapis arvensis* L. and *Phalaris canariensis* L. and one cultivated specie *Triticum durum* L.. The antifungal activity was investigated *in vitro* using five targeted fungal strains. Tested samples were differently effective toward tested plants and target fungi depending on the variability of their chemical compositions. All sample oils showed a significant phytotoxic effects and needles oils exhibited the highest herbicidal effects against all tested species. The highest fungitoxic properties were obtained with needles and cones essential oil against all fungi. Keywords: *Pinus pinaster* Aiton, essential oils, antioxidant activity, herbicidal activity, antifungal activity.

## **Determination of the anti-inflammatory activity of nano spray-dried nanoparticles with in vivo HET-CAM assay that can be used in post-operative wound healing**

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### **Abstract:**

Ketorolac tromethamine is a non-steroidal anti-inflammatory drug (NSAID) from the heteroaryl acetic acid derivatives class that acts as a non-selective COX inhibitor. KT is often used successfully in post-surgical (postoperative) pain and surgical wounds. If the physiologically inflammatory response in wound healing is prolonged or exacerbated, it leads to a delay in the later stages of proper wound healing. In this case, anti-inflammatory agents are needed. Spray drying is one of the most extensively studied processes in the pharmaceutical field. It is frequently used for drug formulations to be used topically. Within the scope of this study, ketorolac tromethamine loaded nanoparticle based drug delivery systems, which can be effective in pain treatment and wound healing processes in postoperative conditions, were prepared. The in vivo 'Hen's Egg Test on the Chorioallantoic Membrane' assay was performed on the selected optimum formulation for anti-inflammatory activity. The in vivo anti-inflammatory activity results indicated that the nanoparticle formulation including ketorolac tromethamine as 100 µg / pellet showed significantly strong anti-inflammatory potential with  $85.625 \pm 11.825$  % inhibition value and no embryotoxicity whereas ketorolac tromethamine showed weak activity with  $60 \pm 13.675$  % inhibition on the chorioallantoic Membrane. With the obtained Hen's Egg Test on the chorioallantoic Membrane assay result, it has the hope of a successful nano-topical formulation especially in wound healing.

**Keywords:** HET-CAM, Ketorolac tromethamine, Nanoparticle, Wound healing.

*Oral Presentation*

## **Effect of the Diet Supplemented with Cadmium on Cell Death in the Soil Invertebrate *Lithobius forficatus***

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### **Abstract:**

Heavy metals can affect organisms directly from the environment through the epidermis or mucous membranes and indirectly when eating food contaminated with these metals. They can damage the organ structure, disturb their function, and cause developmental disorders by affecting the somatic tissues and the germinal tissues. The project's main purpose was to investigate cell death processes in cells of different organs: midgut, salivary glands, and gonads: ovaries and testes in soil invertebrate *Lithobius forficatus* (Myriapoda, Chilopoda) in case of feeding animals with the diet supplemented with cadmium. The animals were divided into experimental groups: C – the control group, the animals cultured in laboratory conditions in a horticultural soil and fed with *Chironomus* larvae; Cd12 – animals cultured in a horticultural soil and fed with *Chironomus* larvae maintained in water containing 80 mg/liter CdCl<sub>2</sub>, 12 days, Cd45 - animals cultured in a horticultural soil and fed with *Chironomus* larvae maintained in water containing 80 mg/liter CdCl<sub>2</sub>, 45 days. *Chironomus* larvae were cultured in tap water supplemented with 80mg/l CdCl<sub>2</sub> for 7 days. The studies were conducted using transmission electron microscopy (TEM) and flow cytometry. Analysis using the transmission electron microscope showed changes in the ultrastructure of cells in both somatic and germinal organs. Moreover, quantitative analysis revealed increased apoptosis and necrosis according to long-lasting cadmium consumption.

**Keywords:** cadmium, digestive system, gonads, cell death.

The study has been financed by the National Science Centre, Poland, grant no 2017/25/B/NZ4/00420.

## The Protective Effect of Boron Against Aflatoxin B1 Induced Liver Injury in Male Rats<sup>#</sup>

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### Abstract:

Contamination of aflatoxins, which has an important place among mycotoxins, from food and feed brings serious health problems on human and animal health. Because of their intake, special toxic effects (carcinogenic, teratogenic, and mutagenic effects) and hepatotoxic, nephrotoxic, genotoxic, and immunosuppressive effects occur in tissues and organs, especially in the liver. For this reason, various substances with antioxidant properties are primarily preferred to prevent undesirable damage caused by aflatoxins. It has been reported that boron and its compounds have antioxidant, cell protective, and anti-genotoxic effects. In this study, it was aimed to investigate the protective effect of boron in rats with subacute Aflatoxin B1 (AFB1) liver damage. In the study, 0,125 mg/kg AFB1 and 5, 10, and 20 mg boron/kg doses of boric acid were given to male Sprague Dawley rats for 21 days. It was determined that AFB1 treatment increased liver enzyme activities (AST, ALT, and ALP) and lipid peroxidation (MDA) levels, on the other hand, it caused a decrease in glutathione (GSH) and antioxidant enzyme activities (SOD and CAT). In addition, it was determined that the mRNA expression levels of apoptotic (*Bax*, *Caspase 3*, *Caspase 8*, *Caspase 9*, and *p53*) and proinflammatory (*TNF- $\alpha$*  and *NF $\kappa$ B*) genes in liver tissue increased and the mRNA expression of the anti-apoptotic gene (*Bcl-2*) decreased. It was observed that AFB1 treatment increased DNA damage and caused histopathological changes in the liver tissue. It was determined that boron applications at doses of 5, 10, and 20 mg/kg given with AFB1 reversed these negative changes. As a result, it was determined that boron exhibited hepatoprotective effect together with antioxidant, anti-inflammatory, and anti-apoptotic effects against AFB1-induced liver damage.

Keywords: Aflatoxin B1, biochemical parameters, boron, liver damage, rat.

<sup>#</sup>This study was PhD thesis of the first author and financially supported by the Afyon Kocatepe University Scientific Research Council, Afyonkarahisar, Turkey (Project no: 20. SAĞ.BİL.04).

## Investigation of Therapeutic Activity of Fullerene C<sub>60</sub> against Liver Tissue Damage by Biochemical and Histopathological Analysis

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### Abstract:

In recent years, it has been determined that fullerene C<sub>60</sub> has strong proinflammatory activities as well as a potential anticancer activity. In this study, the effect of fullerene C<sub>60</sub> nanoparticle on some biochemical and histopathological analysis against 7,12-dimethylbenz [a] anthracene (DMBA)-induced liver tissue damage in Wistar albino female rats was investigated. The animal experiments part of this study was carried out at the Firat University Experimental Animal Research Center (FUDAM) with the permission of the Firat University Animal Experiments Ethics Committee, dated 27.01.2021 and numbered 2021/02. In this study, 60 Wistar albino female rats (n=60, 8 weeks old) were used. Groups: (i) Control Group: Group fed with standard diet; (ii) Fullerene C<sub>60</sub> Group: The group given Fullerene C<sub>60</sub> (1.7 mg/kg bw, oral gavage); (iii) DMBA Group: The group given DMBA (45 mg/kg bw, oral gavage); (iv) Fullerene C<sub>60</sub> + DMBA Group: The group given Fullerene C<sub>60</sub> (1.7 mg/kg bw, oral gavage) and DMBA (45 mg/kg bw, oral gavage). The rats were decapitated after 16 weeks and their liver tissues were examined. Lipid peroxidation malondialdehyde analysis, glutathione level and catalase activity in liver tissue were determined by spectrophotometer. In addition, liver tissues were evaluated by histopathologically. Compared to the DMBA group, it was observed that the malondialdehyde level decreased, while the glutathione level and catalase activity increased significantly in the Fullerene C<sub>60</sub> + DMBA group. Moreover, inflammatory cell formation and hydropic degeneration were observed to be significantly reduced in the Fullerene C<sub>60</sub> + DMBA group compared to the DMBA group. When these results were evaluated, it was concluded that fullerene C<sub>60</sub> had a therapeutic effect by significantly reducing the damage to the liver tissue.

Keywords: DMBA, fullerene C<sub>60</sub>, liver tissue.

#This work was supported by Firat University Scientific Research Projects Unit (FUBAP) with FF. 20.07 project number. In addition, this study was supported by the Council of Higher Education (CoHE) 100/2000 Biotechnology priority field doctoral project and The Scientific and Technological Research Council of Turkey (TUBITAK) 2211/C program.

## Relation of Protective Effect of Fullerene C<sub>60</sub> Nanoparticle against Lung Tissue Damage in Rats with Biochemical and Histopathological Biomarkers

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### Abstract:

Fullerene C<sub>60</sub> is one of the most common carbon-based nanomaterials known to have anti-oxidant, anti-viral, anti-inflammatory and cytoprotective properties. The aim of this study was to investigate the protective effect of fullerene C<sub>60</sub> against DMBA (7,12-dimethylbenz [a] anthracene) induced lung tissue damage in Wistar albino female rats. The animal experiments part of our study was carried out at the Firat University Experimental Animals Research Center with the permission of the Firat University Animal Experiments Ethics Committee, dated 27.01.2021 and numbered 2021/02. In this study, 60 Wistar albino female rats (n=60, 8 weeks old) were used. The experimental groups are as follows: (1) Control Group: Group fed with standard diet; (2) Fullerene C<sub>60</sub> Group: The group given Fullerene C<sub>60</sub> (1.7 mg/kg bw, oral gavage); (3) DMBA Group: The group given DMBA (45 mg/kg bw, oral gavage); (4) Fullerene C<sub>60</sub> + DMBA Group: The group given Fullerene C<sub>60</sub> (1.7 mg/kg bw, oral gavage) and DMBA (45 mg/kg bw, oral gavage). After 16 weeks, the rats were decapitated and their lung tissues were examined biochemically and histopathologically. Lipid peroxidation in lung tissue was determined by malondialdehyde (MDA) analysis, catalase activity (CAT), glutathione (GSH) and total protein levels were determined by spectrophotometer. In addition, lung tissue was examined histopathologically and pathomorphological changes were determined. Compared to the DMBA group, the MDA levels decreased, while CAT, GSH and total protein levels increased in the Fullerene C<sub>60</sub> + DMBA group. When the histopathological results of our study were examined, reductions in interalveolar wall thickness, inflammatory cell formation and hemorrhage were observed in the Fullerene C<sub>60</sub> + DMBA treated group compared to the DMBA group. According to all these results, it has been determined that fullerene C<sub>60</sub> has anti-oxidant and healing effects against lung tissue damage.

Keywords: Fullerene C<sub>60</sub>, lipid peroxidation, lung tissue.

#This work was supported by Firat University Scientific Research Projects Unit (FUBAP) with FF. 20.07 project number. In addition, this study was supported by the Council of Higher Education (CoHE) 100/2000 Biotechnology priority field doctoral project and The Scientific and Technological Research Council of Turkey (TUBITAK) 2211/C program.

## Ferroptosis-regulating effects of capsaicin on Caco-2 human colon carcinoma cells

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### Abstract:

Colon cancer is the fourth most common type of cancer with close to 2 million new cases detected worldwide each year. Despite the fact that the etiological mechanisms have been revealed for years in this type of cancer and surgical and chemotherapy options have been developed over the years, the prognosis in patients is mostly unsatisfactory. Capsaicin is an alkaloid that is the main active ingredient responsible for the pungent taste in hot peppers. Capsaicin regulates cell proliferation, growth and death by targeting multiple signaling pathways. In this study, we aimed to investigate the effects of capsaicin on Caco-2 human colon cancer cell lines through ferroptosis, which is one of the cellular death pathways. First, we determined the cytotoxic concentration of capsaicin (range 0 to 200  $\mu\text{M}$ ) by analysis of 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT). Next, the effects of capsaicin on cell proliferation were analyzed by the 5-bromo-2'-deoxyuridine (BrdU) assay on cells incubated with capsaicin. Glutathione peroxidase 4 (GPX4), acyl-CoA synthetase long-chain family member 4 (ACSL4) and malondialdehyde (MDA) levels in Caco-2 cells treated with capsaicin were determined by ELISA method. According to MTT analysis, IC<sub>25</sub> and IC<sub>50</sub> concentrations were determined as 82.4 and 125.8  $\mu\text{M}$ , respectively. The proliferation in cells treated with 82.4, 91.6 and 125.8  $\mu\text{M}$  capsaicin concentrations for 24 hours decreased in a concentration-dependent manner hours ( $p < 0.05$  and  $p < 0.01$  vs. control). Furthermore, capsaicin triggered a concentration-dependent increase in ACSL4 and MDA levels and a decrease in GPX4 levels in Caco-2 cells incubated with the capsaicin 82.4, 91.6 and 125.8  $\mu\text{M}$  concentrations for 24 hours ( $p < 0.01$  vs. control). Our results showed that capsaicin has suppressive effects on cellular proliferation via the ferroptosis signaling pathway in Caco-2 human colon cancer cells. Additionally, our data could provide a new perspective of drug resistance prevention in the colon cancer treatment with the ferroptosis-targeting effects of capsaicin. However, further molecular studies are needed, including *in vitro* and *in vivo* experiments.

Keywords: capsaicin, cellular proliferation, colon cancer, ferroptosis.

## **Pharmacokinetics of Carprofen Following Single and Repeated Intravenous Administrations of Different Doses in Sheep**

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### **Abstract:**

The aim of this study was to determine pharmacokinetics of carprofen following single and repeated intravenous (IV) administrations at 1.4 and 4 mg/kg doses in sheep. The study was carried out on twelve sheep in two experiments as single and multiple dose pharmacokinetics. In experiment 1, carprofen was administered via IV at single doses of 1.4 (n=6) and 4 mg/kg (n=6) in randomized parallel design. In experiment 2, the same dose groups in experiment 1 following the 21-day washout period received intravenously carprofen every 24 h for 5 days. Plasma concentrations were measured using high-performance liquid chromatography-UV and analyzed by non-compartmental method. After both single and repeated administrations, carprofen at 4 mg/kg dose showed prolonged  $t_{1/2\lambda z}$  and MRT, increased  $V_{dss}$  and decreased  $C_0$  compared with 1.4 mg/kg dose. The AUC and  $Cl_T$  at 4 mg/kg dose on day 5 decreased and increased, respectively, according to 1.4 mg/kg dose. Multiple doses of carprofen were found to cause moderate accumulation of carprofen. The long  $t_{1/2\lambda z}$  in single and multiple dose studies suggest the possibility of effective use of carprofen in sheep. However, further studies are required to establish dose interval for reduction of accumulation and to evaluate the clinical efficacy of administering carprofen.

**Keywords:** carprofen, intravenous, multiple doses, pharmacokinetics, sheep.

## **Investigation of The Synergistic Effect of Phenolic Compounds on Acetylcholinesterase**

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### **Abstract:**

Acetylcholinesterase (AChE) hydrolyzes acetylcholine, a neurotransmitter, into acetic acid and choline. AChE activity enhances in the age-related neurological disorders. Thus, the inhibition of AChE is a crucial therapeutic approach to treat the cognitive disorder such as Alzheimer's disease. Natural compounds derived from plants are widely investigated as sources of AChE inhibitors. It has been reported that phenolic compounds naturally found in plants and fruits have the potential to inhibit AChE activity. Gallic acid (GA) and vanillic acid (VA) are phenolic acid derivatives found in plants. These compounds are bioactive molecules with anti-inflammatory, antioxidant, antibacterial and antimicrobial effects. In this study, the effect of different doses of GA and VA mixture on AChE activity was investigated. A mixture of GA and VA was prepared at 50 and 100  $\mu\text{M}$  concentrations of both compounds. This mixture was applied to third instar fly larvae. After the application, the heads of adult flies were dissected and homogenized. AChE activity was measured by Ellman's method for each group. When the results were examined, it was found that 50  $\mu\text{M}$  of GA-VA mixture did not show a significant difference in enzyme activity, but 100  $\mu\text{M}$  of GA-VA mixture caused a significant decrease in enzyme activity. It could be beneficial to use the synergistic effect of phenolic compounds in the investigation of AChE inhibitors.

**Keywords:** ache activity, gallic acid, phenolic acid, vanillic acid.

## Effects of Phosphorus Solubilizing Bacteria, Phosphorus Fertilizer And Poultry Litter Treatments On The Seed Yield And Yield Components Of Common Vetch

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### Abstract:

Fertilization is one of the practical and/or efficient methods to obtain high yield and quality in plant production. Different plant species may need different types of fertilizers or different combination of these fertilizers. For example, legume forage crops need more phosphorus fertilization as they can supply their nitrogen needs symbiotically. In recent years, environmentally friendly phosphorus sources, which can reduce the use of chemical fertilizers or as an alternative to chemical fertilizers, have gained importance. In this study carried out to investigate the effects of phosphate solubilizing bacteria (*Bacillus megaterium M-3*) in one dose ( $10^8$  CFU ml<sup>-1</sup>), poultry litter in 2 different doses (0 and 3 t ha<sup>-1</sup>) and phosphorus fertilizer in 3 different doses (0, 50, 100 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup>) applications on seed yield and yield components of Common vetch in Erzurum irrigated conditions during 2009. According to the one-year results, phosphate solubilizing bacteria, poultry litter and 100 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> phosphorus fertilizer applications increased the seed yield significantly ( $p < 0.01$ ). As a matter of fact, the highest seed yield was obtained with bacteria ( $10^8$  CFU ml<sup>-1</sup>) and phosphorus fertilizer application with 100 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup>. Moreover, 100 kg ha<sup>-1</sup> phosphorus fertilizer application was also increased the number of pods, the number of grains per pod and 1000 grain weight while the effects of bacteria application on the number of pods, the number of grains per pod and 1000 grain weight was insignificant, and the effects of poultry litter was negative. According to these results, in addition to 100 kg ha<sup>-1</sup> P<sub>2</sub>O<sub>5</sub> application,  $10^8$  CFU ml<sup>-1</sup> phosphorus solubilizing bacteria (*Bacillus megaterium M-3*) will be suitable for high yield in order to produce seeds of common vetch in irrigated areas such as Erzurum at high altitudes and with phosphorus poor or inadequate soils.

Key words: Common vetch, phosphorus fertilizer, poultry litter, bacteria, seed yield.

## **Design of Orally Disintegrating Antihistaminic Tablet and Investigation of Kinetic Properties**

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### **Abstract:**

Allergic rhinitis, which manifests itself with complaints such as runny nose, sneezing, nasal congestion, itching in the eyes, is a term used to describe the clinical symptoms associated with type 1 allergic diseases, defined as allergic rhinoconjunctivitis. The incidence of this disease, which is seen in all countries, in all ethnic groups and in people of all ages, is in the range of 10-40% on average. Allergic rhinitis has negative effects on the patient's quality of life and daily activities. Various therapeutic agents are used in the treatment of allergic rhinitis for eliminate and alleviate these effects. Among all these therapeutic agents, Bilastine stands out with its various properties. These are mainly features such as having low side effects, showing peripheral effects, not being metabolized and at the same time having a fast action compared to other antihistamines. However, Bilastine does not cause sedative or cardio-toxic effects. However, when used in tablet form, the bioavailability rate remains at 61%. So as to increase this rate and to minimize unwanted interactions in the gastrointestinal environment, the design in the form of "Orally Dispersible Tablets" will be the most appropriate method. In the study carried out for this purpose, direct compression method, which is the most widely used among the methods used to produce orally dispersible tablet form, such as Direct compression, fast melting technology, Sublimation, and lyophilisation was used. As a result of this study, the tablets obtained disintegrate in 40 seconds at a pH value of 6.8, which is the pH value of the mouth saliva, and the solubility value of this tablet was found to be 93%.

**Keywords:** Bilastine, orally disintegrating tablet, antihistaminic, rhino conjunctivitis.

## **Synthesis of New Thiosemicarbazone Derivatives and Evaluation of Their Cytotoxic Activity**

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### **Abstract:**

Cancer is one of the health problems that the second leading cause of death. Breast cancer is the most common type of cancer, while lung cancer causes the most deaths in all cancer types. The cancer treatment includes immunotherapy, radiotherapy, surgery and chemotherapy. Although there are many chemotherapeutic agents, the development of side effects, drug resistance and the high cost of treatment are among the most important problems of chemotherapeutic agents. Therefore, new drug development studies play an important role in cancer treatment. Thiosemicarbazone structures have a wide spectrum of pharmacological and biological activities. Thiosemicarbazones exhibit numerous different activities such as anticancer, antimicrobial, anticonvulsant, antidiabetic and anti-inflammatory. Because they can interact with target enzymes or receptors by having both hydrogen donor and hydrogen acceptor properties. Thiosemicarbazones are generally obtained by condensation reaction of thiosemicarbazide with a suitable aldehyde or ketone. In this study, some new thiosemicarbazone derivatives bearing methylsulfonyl group were synthesized. The structures of all synthesized compounds were confirmed by IR, <sup>1</sup>H-NMR, <sup>13</sup>C-NMR spectroscopic methods and elemental analysis. The aim of this study is to evaluate the effects of the synthesized compounds on viability on the human breast cancer cell line (MCF7). The effects of different concentrations of compounds (3, 10, 30, 90, 150 and 300 µM) on cell viability were tested with the Sulphorhodamin B (SRB) method. According to the activity results, some of the synthesized compounds have been shown to reduce MCF7 cell viability.

**Keywords:** Thiosemicarbazone, MCF7, anticancer activity, SRB.

## **Impact of micro and nano particles of polystyrene on *Drosophila melanogaster***

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### **Abstract:**

A characteristic sign of human environmental impact is the widespread presence of plastics. Environmental plastic litter undergo aging processes and degrade to smaller than 5 mm microplastics (MP) and 0.1  $\mu\text{m}$  nanoplastics (NP). We have studied the impact of MP and NP on terrestrial model organism *D. melanogaster*. We used fluorescent and transmission electron microscopy to analyze the intake and accumulation of plastic in *D. melanogaster* cultivated with food containing MP and NP. Specimens were fed for 14 days with the yeast pasta mixed with 0.04-0.06  $\mu\text{m}$ , 0.4-0.6  $\mu\text{m}$ , and 1.0-1.9  $\mu\text{m}$  polystyrene particles. We have checked the accumulation of MP and NP in the alimentary tract and ovary and their impact on the morphological structure and ultrastructure of selected tissues and cells. We also determined whether the exposition to polystyrene MP and NP changes the proper functioning of the tissues and cells and whether it influences their physiological parameters. The analysis has shown the presence of MP and NP in the lumen of the alimentary tract of adults and larvae. It indicates that particles were taken with food. Moreover, 0.04-0.06  $\mu\text{m}$  NP were detected between and inside the enterocytes' microvilli and within the autophagosomes and autolysosomes. It indicates that plastic particles can intake into the cells and that cells tried to eliminate them via autophagy. The apoptosis and % ROS+ analysis has shown, in turn, that ovaries seem to be the most exposed tissue to the harmful effects of polystyrene particles. Surprisingly, no effect of MP and NP on the alimentary tract was noted. A significant increase in the percentage of apoptotic cells was found in the ovaries cells after they were treated with 0.04-0.06  $\mu\text{m}$  NP and 1.0-1.9  $\mu\text{m}$  MP compared to the control. The groups treated with 0.04-0.06  $\mu\text{m}$  NP and 1.0-1.9  $\mu\text{m}$  MP also showed significant decreases in % intracellular ROS+ compared to control in ovaries cells. The obtained results indicate MP and NP induced apoptosis in ovarian cells. In conclusion, MP and NP polystyrene particles are taken with food and cause tissue and cell physiological parameters changes.

**Keywords:** plastic particles, ultrastructure, cell response, insect.

## Determination of Anti-candidal and Anti-bacterial Activity of Some Deep Eutectic Solvents (DESs)

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### Abstract:

With the increasing industrial activities in the 20<sup>th</sup> century, the threat posed by the chemicals used in the production processes for human and environmental health is becoming more and more felt every day. In recent years, thanks to this increasing awareness, various measures are taken in order to minimize these threats. For this reason, the potential of using deep eutectic solvents (DESs) as an alternative to the conventional solvents commonly used in different industries is being investigated more and more every day. In this study, the anti-candidal and anti-bacterial activities of some deep eutectic solvents were investigated. For this purpose, cholin chloride (ChCl) and glycerol were used as hydrogen bond acceptor (HBA). For the cholin chloride based DESs, acetic acid, urea, glycerol and lactic acid were used as hydrogen bond donors (HBD). In the second group, for glycerol based DES, citric acid monohydrate was used as HBD. To determine *in-vitro* antimicrobial activities of these green solvents disc diffusion method was used. For this purpose, six different bacteria (3 Gram positive and 3 Gram negative bacteria) and 6 different *Candida* samples were used. In the obtained results in choline-based solvents, it was observed that the samples using acetic acid and lactic acid as hydrogen bond donors had an inhibition effect against both bacteria and yeasts. Also, in choline-based samples it was observed that the sample using urea as HBD had a partial inhibitory effect against only yeasts. Finally, it was observed that the glycerol-based DES solution prepared using citric acid monohydrate as HBD was effective only against bacteria. After detecting the antimicrobial activities of these DES samples, the minimum inhibition concentration values (MICs) were determined by the micro-broth dilution method using 96 well microtiter plates. In the process of determining the minimum inhibition concentrations, it was determined that the MIC values between ½ - ¼ (v/v). As a result, it can be said that choline and glycerol-based DES solutions can be used for antimicrobial purposes. However, detailed studies are required to determine the potential for use of these solutions in industrial areas such as the cosmetics, pharmaceutical and food industries.

Keywords: deep eutectic solvents (DESs), antimicrobial activity, minimum inhibition concentration (MIC).

## **The correlation between inferior thyroid artery-to-subclavian artery peak systolic velocity ratio and other Doppler ultrasonographic parameters of the thyroid gland**

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### **Abstract:**

The aim of the study was to investigate the correlation between inferior thyroid artery (ITA)-to-subclavian artery (SCA) average peak systolic velocity (PSV) ratio and other Doppler ultrasonographic parameters of the thyroid gland as volume, echo pattern and parenchymal vascularity. In this study, 86 consecutive adult participants regardless of whether they had thyroid disease who came to our radiology clinic with routine thyroid ultrasonography and had no significant thyroid nodules were included. The study was conducted from October to December 2021. The ultrasonographic exam was performed 7-12 MHz (LOGIQ E9 GE Healthcare, Chicago, IL) linear probe. Thyroid glands of all patients were evaluated with color-flow Doppler ultrasonography for volume, vascularity, and peak systolic velocity of the ITA and SCA. Thyroid blood flow was measured in pulsed Doppler mode at the ITA and SCA on both sides. SCA-PSV was measured from the mid-segment in the supraclavicular region. Parenchymal vascularity was recorded using a subjective semi-quantitative scoring system. Power Doppler (PD) score criteria were classified as 0-2 (0: no or less than 10 pixel, 1: 10 to 20 pixel, 2: more than 20 pixel). Parenchymal echo pattern were classified as homogeneous, mild heterogeneous and severe heterogeneous. The mean age of participants was  $38.9 \pm 9.7$ . Fifty-one of the participants were female(%59.3) and 35 were male(%40.7). Thyroid gland volume was measured as  $6.4 \pm 1.6$  mL in the right lobe and  $6.7 \pm 1.9$  mL in the left lobe. On right and left sides, ITA-PSV values were  $17.7 \pm 6.1$  and  $15.9 \pm 5.7$ , SCA-PSV values were  $94.1 \pm 8.8$  and  $97.2 \pm 11.2$ , while ITA-to-SCA PSV ratio  $\%18.8 \pm 3.6$  and  $\%16.9 \pm 4.3$  respectively. No significant difference in the ITA and SCA PSV values and ITA-to-SCA PSV ratios among demographic data of participants. There was a positive correlation between ITA-to-SCA PSV ratio and high PD scores, thyroid volume and also heterogeneous parenchymal echo pattern( $p < 0.05$ ). A positive correlation also found between ITA-PSV values and PD scores( $p < 0.05$ ). In conclusion, ITA-to-SCA PSV ratio may be used as a parameter in future studies on thyroid diseases.

**Keywords:** Inferior thyroid artery, Doppler sonography, peak systolic velocity

*Oral Presentation*

## **Comparison of Glucose Oxidase Method and Electro Biochemical Glucose Sensor Method in Determination of Glucose**

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**Abstract:**

Glucose level is used as a marker in diabetes mellitus. Since complications such as retinopathy due to diabetes mellitus may occur, it is very important to make a quick and easy determination. In this study, it is aimed to compare the electrobiochemical glucose method and glucose oxidase method, which can be an alternative to glucose determination, which is important in terms of diagnosis and follow-up of treatment. For method comparison studies, a total of 200 results were obtained from 5 different solutions containing different amounts of glucose. All samples were analyzed with both the electrobiochemical glucose sensor and the spectrophotometric glucose oxidase method. Analysis results were compared statistically. In the ANOVA test performed according to the results of the samples used in the comparison of the obtained values, it was determined that the results of the two methods were in correlation with each other. In addition, ROC (Receiver Operation Characteristics, Receiver Operating Characteristic) curve has been drawn and its acceptability as an alternative method has been shown. In our study we obtain ROC curve value as 66,5 %. This shown that both of two methods can use a new laboratory method for glucose determination. Electro biochemical glucose sensor method can be evaluated as an alternative method to glucose oxidase method.

**Keywords:** glucose oxidase, electro biochemistry, glucose.

## **Effect of Mandarin Peel Ethanolic Extract on Diclofenac-Induced Liver and Kidney Damage**

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### **Abstract:**

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) are the first therapeutic agents that come to mind in the treatment of many inflammatory diseases and pain relief, as well as alleviating non-specific fever. However, despite the wide range of uses of NSAIDs; It is known that they have serious side effects such as bleeding, ulceration, gastrointestinal tissue damage, hepatic destruction, renal papillary damage and necrosis. Diclofenac (DF); a phenyl acetic acid derivative drug in the NSAID group used for anti-inflammatory, analgesic and antipyretic purposes in human and animal health. Although it is an effective agent, various side effects can be seen, especially on liver and kidney tissue, depending on the use of DF. In our study, the protective effect of Mandarin Peel Ethanolic Extract (MPEE) application on DF treatment were investigated. A total of 24 male Wistar Albino rats were randomly divided into four groups as 1) Control, 2) DF, 3) MPEE and 4) DF + MPEE. In our study, when MPEE alone was compared with the control group, it was found that MPEE application did not cause any statistically significant change in liver and kidney enzymes except for the BUN value. On the contrary, ALT (212%), AST (382%) and ALP (347%), which are indicators of liver damage, were observed to be significantly increased in the DF treated group compared to the control group ( $p < 0.05$ ). Similarly BUN, CREA and UA, which are markers of kidney damage, were found to be increased 6.09, 6.01 and 3.48 times, respectively, in the DF group compared to the control group ( $p < 0.05$ ). Compared to the DF group alone, there was a statistically significant decrease in these parameters in the DF+MPEE group ( $p < 0.05$ ). Considering the study, it can be stated that MPEE has a protective effect on the liver and kidney.

**Keywords:** diclofenac, mandarin, liver, kidney

**Oral Presentation**

## **Production of Amylase from *Aeribacillus pallidus* AO7 using Potato Peel Powder**

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### **Abstract:**

Amylases are a group of hydrolase enzymes having ability to degrade starch and similar molecules, reducing starch to simple sugars. Amylases are considered as one of the most crucial industrial enzymes. There is a large number of applications of amylases in various industries such as food, paper, textile and detergents. Moreover, amylase enzymes for industrial applications are supposed to have high temperature activity and stability. Thermostable amylases which would be isolated mainly from thermophilic microorganisms have found a wide number of commercial applications owing to their decent overall stability. The current study focuses on investigation of amylolytic activity of thermophilic bacterium AO7 which was isolated from the hot spring situated in Turkey. Genetic analysis performed by 16S rRNA sequences demonstrated that the isolated strain AO7 belonged to *Aeribacillus pallidus*. In order to make the production process more cost-effective, Potato Peel Powder (PPP), which is regarded as waste and has high starch content, was used as substrate for amylase production. As a result of optimisation studies for production of amylase enzyme with *Aeribacillus pallidus* AO7, the optimal parameters were determined as PPP concentration of 50 g/L, temperature of 55 °C, initial pH of 7.0 and incubation time of 48 h. As a consequence of experiments carried out under optimised culture conditions, the amylase activity was detected as 65 U/mL.

**Keywords:** Amylase, Potato Peel Powder, *Aeribacillus pallidus* AO7

## **Smart polymers modified electrochemical sensor for glycated albumin for monitoring of diabetes**

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### **Abstract:**

HbA1c, expressed as the percentage of adult glycated hemoglobin, is the most commonly used parameter in the diagnosis of chronic glycemia. HbA1c, the glycosylated form of hemoglobin (Hb), reflects the average plasma glucose over the eight to 12 weeks prior to measurement. In a way, it is an alternative biomarker to glucose measurement for the diagnosis of diabetes, due to the difficulty of measuring fasting plasma glucose levels or performing an OGTT, and diurnal variations in glucose. Considering that the Hb half-life is 120 days, the person is called for control after 120 days in order to re-evaluate the high Hb value during the diagnosis process. This period is quite long and it is very difficult to foresee possible acute symptoms. Therefore, with this proposed project, it is planned to reduce this period by measuring the glycosylation of Albumin (Alb), the protein found at the highest level in the blood. Albumin half-life is 21 days and it is predicted that this period will be reduced to 21 days when successfully completed with this project. Today, measurement of glycosylated proteins can be done with chromatographic systems, but these are both costly and time-consuming measurement methods. Alternative measurement methods can be developed with biosensors and sensor systems. Since electroactive species cannot be formed in such systems, only affinity-based biosensors such as antigen-antibody can be developed, and it can be performed by electrochemical impedance spectroscopy. In this study, artificial glycosylated lysine receptors was formed by molecularly imprinted polymers (aminophenyl boronic acid and pyrrole) around glycosylated lysine amino acids on an electrode that located on albumin, which is known to be glycosylated through lysine groups. The sensor has ability to detect albumin in serum samples between 2-14%. Repeatability is also good with a standard deviation as  $\pm 0.32\%$ .

**Keywords:** glycated albumin, sensor, molecular imprinting, diabetes, electrochemical impedance spectroscopy

*Oral Presentation*

## **Production and optimization of lipase by *Anoxybacillus flavitermus* MOB61 using cooking oil as substrate**

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### **Abstract:**

The main source of industrial enzymes is microorganisms. The use of microorganisms in the production of enzymes has some important advantages. Compared to enzymes derived from herbal and animal sources, microbial enzymes can demonstrate higher stability under extreme conditions and can be produced in higher quantities. In addition, the production of microbial enzymes can be carried out at low cost using organic wastes. Thermophilic microorganisms are considered as a crucial source of lipase, especially of industrial importance. Lipases produced by thermophilic microorganisms exhibit a very stable structure and high activity at high temperatures in organic solvents. Moreover, these lipases show high resistance to chemical denaturation and can have high activity at alkaline pH values. Due to their high activity and stability at alkaline pH values and elevated temperatures, thermophilic lipases are mainly utilised in the detergent industry. Therefore, isolation, identification and characterization of thermophilic bacteria play an important role for the production of thermophilic lipase. In this study, lipase production and optimization was carried out with *Anoxybacillus flavitermus* MOB isolated from hot springs using cooking oil as a substrate. As a result of analysis, the optimal conditions were determined as; 3 g/L fish peptone, pH:7, 72 hours incubation time and temperature 50 °C. Under optimized conditions the cellulase enzyme activity was increased approximately 2-fold (316 U/mL).

**Keywords:** optimization, production, lipase, *Anoxybacillus flavithermus*

## **Effects of Medical Ozone Therapy on Xanthine Oxidase Activities in Paracetamol Treated Rats**

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### **Abstract:**

Paracetamol is one of the most widely used analgesics and antipyretic drugs. Paracetamol overdose has life-threatening effects on liver, kidney and heart so treatment of paracetamol-induced toxicity has life-saving importance. The aim of this study was to evaluate the efficacy of medical ozone therapy and the role of xanthine oxidase in the experimental model of paracetamol toxication. Twenty-eight healthy three-month-old male Wistar-Albino rats were used in this study. The animals were randomly divided into four experimental groups including 7 rats in each. These groups were arranged as follows: Control group, ozone group (150 µg/kg/day, i.p. for 3 weeks), paracetamol group (2 g/kg/ orally single dose) group, ozone (150 µg/kg/day, i.p. for 3 weeks)+paracetamol (2 g/kg/ orally single dose) group. Paracetamol was administered on the 21<sup>st</sup> day of ozone application. The animals were sacrificed at the end of the applications. Xanthine oxidase activity (the isoform that produces superoxide radical) was determined spectrophotometrically according to Hashimoto's method in tissue homogenates. There was a significant increase in xanthine oxidase, an important source of reactive oxygen species, activities in the blood ( $p<0.001$ ), liver ( $p<0.05$ ), kidney ( $p<0.001$ ) and heart ( $p<0.001$ ) tissues of rats treated paracetamol compared to the control group. It was determined that tissues taken from rats treated with ozone + paracetamol had lower xanthine oxidase in the blood ( $p<0.001$ ), liver ( $p<0.05$ ), kidney ( $p<0.001$ ) and heart ( $p<0.001$ ) tissues compared to the paracetamol group. This increased xanthine oxidase activity may be responsible for paracetamol-induced tissue damage. There was ozone showed protection against paracetamol-induced hepatotoxicity, nephrotoxicity and cardiotoxicity. However, before its clinical use, further studies should be planned to determine the possible side effects and long-term effects of ozone therapy.

**Keywords:** paracetamol, ozone therapy, xanthine oxidase, toxicity

## Effects of Endocrine Disrupting Chemical Bisphenol A on Male Reproductive Function in Adult Angora Goat

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### Abstract:

Endocrine-disrupting chemicals (EDCs) are synthetic or natural compounds that can be found in the environment in various forms, such as plasticizers [e.g., bisphenol A (BPA)]. BPA affects Ankara Goats primarily through the tools and equipment used in animal feeding, especially in animal health. To investigate the effects of estrogenic EDCs BPA on andrological parameters in adult Angora goats. In the experiment, we exposed the Angora goat to 5µg/kg/day BPA (I.group), 5000µg/kg/day BPA (II.group), and 25000µg/kg/day BPA (III.group) during 70 days in the season. BPA was added to their rations, their consumption was assured, and a total of 144 ejaculates were taken by the artificial vagina method. We analyzed motility of spermatozoa (total motility (TM,%), progressive motility (PM,%)), and kinetic parameters (mean orbital velocity (VAP,µm/s), linear velocity (VSL,µm/s), curvilinear velocity (VCL,µm/s), linearity (STR,%), curvilinear path linearity (LIN,%), lateral deviation amplitude of spermatozoon head (ALH,µm), crossover frequency (BCF,HZ)), plasma membrane and acrosome integrity (PMAI) and mitochondrial membrane potential (MMP) were evaluated. In terms of spermatological and kinematic values, total density, total motility and progressive motility in bucks were lower in BPA groups than in controls, however, there was no difference in kinetic parameters. The group of control showed that 40,3±3,5 motility and BPA groups I, II, III had 37.4±4.5, 38.8±4.4, and 34.3±4.6 motility (respectively). PMAI values were higher in buck control groups than BPA groups. PMAI was found in control 40,3±3,5 and BPA groups I, II, and III 27.9±3.6, 31.0±3.7 and 26.3±3.3 respectively. In addition, high MMP (HMMP) and low MMP (LMMP) was also analyzed. While HMMP values were higher in control groups (%69.6±2.5) than BPA groups (I.group %61.5±2.7, II.group %62.0±2.1 and III.group %60.4±2.9), LMMP values were lower in control (26.2±2.7) than BPA groups (I.group 41.8±2.1, II.group 40.0±2.3 and 41.5±3.1). Overall, the effects of BPA on the reproductive system of the Angora goat, which is our local value and gene source, have been demonstrated in terms of spermatology and kinematics, and it has been determined that it causes serious damage to fertility. For this reason, it is recommended not to use BPA-derived products for care and feeding purposes in Angora goats.

Keywords: Angora goat, flow cytometry, Bisphenol A (BPA), CASA, Endocrine-disrupting chemical (EDC), spermatogenesis

International Center for Livestock Research and Training, Ankara, Turkey, TAGEM/HAYSÜD/Ü/19/A4/P2/1198

*Oral Presentation*

## **Comparison of the Thermal Stability of Hazelnut Oil and Sunflower Oil During Frying Process**

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### **Abstract:**

Hazelnut oil obtained from the kernel of the hazelnut fruit, which is defined as heart protective food by the American Food and Drug Administration (FDA), has the highest amount of monounsaturated fatty acids and tocopherols among the other vegetable oils. Although it is an excellent nutrient for human health due to its high content of monounsaturated fatty acids and bioactive compounds, its use for cooking and frying is not as common as other vegetable oils. The aim of this study is to compare the thermal stability of hazelnut oil during frying process with sunflower oil, which is the most preferred vegetable oil in Turkey due to its cheap price, by ATR-FTIR (Attenuated total reflectance – Fourier transform infrared) spectroscopy. For this purpose, oil samples were heated in a deep fryer at 180 °C during 24 h for 8 h periods daily and the samples obtained from these oils in every 2 h were examined by using ATR-FTIR spectroscopy. Frying process caused a decrease in the amount of cis fatty acids and increases in the amount of trans fatty acids, primary and secondary oxidation products in both oils. All these changes became more pronounced as the heating time increased in the oils but began earlier and occurred to a higher extent in sunflower oil revealing that hazelnut oil is more resistant to heat than sunflower oil. The results of the current study showed that the thermal stability of hazelnut oil is higher than that of sunflower oil and it could be used as a healthier alternative cooking and frying oil. In addition, this study demonstrated that the thermal stability of the edible oils could be determined easily and quickly using ATR-FTIR spectroscopy.

**Keywords:** hazelnut oil, sunflower oil, thermal stability, ATR-FTIR spectroscopy.

*Oral Presentation*

## **Effect of Myrtle (*Myrtus communis* L.) Essential Oil on Thyroid Hormones in Rats with Propylthiouracil-Induced Hypothyroidism**

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### **Abstract:**

Among today's health problems, metabolic diseases are at the forefront. Hypothyroidism (HT) is a disease characterized by increased TSH, decreased T3&T4 concentrations in serum, with overall metabolic slowdown. Propylthiouracil is a thiouracil-derived antithyroid drug that interacts with thyroperoxidase and peripheral deiodinase and inhibits the synthesis of thyroid hormones, used for experimental purposes or for the treatment of hyperthyroidism. In our study, the effect of essential oils obtained from the leaves, flowers, and roots of *Myrtus communis* L. on thyroid hormones in an HT model induced by propylthiouracil (PTU) in rats was investigated. A total of 36 Wistar albino rats were randomly divided into six groups as follows: (1) Control, (2) PTU, (3) *M. communis* L. oil 200 (MO 200), (4) *M. communis* L. oil 400 (MO 400), (5) PTU + MO 200, and (6) PTU + MO 400. In the study, serum TSH levels were found to be higher and serum TT4, fT4, TT3, and fT3 levels were lower in all PTU-treated groups compared with the control group. While there was no significant change in MO-only groups compared with the control group when the PTU + MO groups and the PTU-only group were compared, no statistically significant difference was found; however, a slight increase in thyroid hormone levels was observed ( $p < .05$ ).

**Keywords:** *M. Communis* L., Hypothyroidism, Thyroid Hormones, Essential Oil

This work was supported by Afyon Kocatepe University Scientific Research Projects Coordination Unit (Project number: 18.KARİYER.248).

*Oral Presentation*

## **Investigation on Antibacterial and Antioxidant of *Lacticaseibacillus rhamnosus* GG Grown in the Presence of Thiamine**

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### **Abstract:**

Thiamine, also known as Vitamin B<sub>1</sub>, is an essential micronutrient and found in a large number of food sources, including legumes, some meats and fish. It can be also taken with supplements and medications. Probiotics, on the other hand, are live microorganisms that have beneficial effects on host and also found in foods and food supplements. *Lacticaseibacillus rhamnosus* GG (previously known as *Lactobacillus rhamnosus* GG) is one of the most studied and very well-known probiotics. It inhibits pathogenic bacteria, modulates the immune system, as well having beneficial effects on disorders of gastrointestinal system. Thus, the aim of the present study was to investigate antibacterial and antioxidant properties of *Lacticaseibacillus rhamnosus* GG grown with thiamine. To achieve this, *Lacticaseibacillus rhamnosus* GG was grown with thiamine, and inhibitory effects of cell-free supernatants of grown probiotics on *E. coli* and *S. aureus* were examined. Furthermore, antioxidant capacities were revealed using DPPH Scavenging Assay.

The results showed that the control group (*Lacticaseibacillus rhamnosus* GG grown without thiamine) decreased the viabilities of *E. coli* and *S. aureus* to 11.9% and 8.8%, respectively. However, when the growth of *Lacticaseibacillus rhamnosus* GG was added with thiamine, the viabilities of *E. coli* and *S. aureus* were decreased to 7.2% and 8.1%, respectively. Furthermore, while control group had 33% DPPH scavenging activity, thiamine-added group had 45% DPPH scavenging activity, which indicates that thiamine further increased the antioxidant properties of this probiotic bacterium.

In conclusion, we showed that thiamine addition to the growth of *Lacticaseibacillus rhamnosus* GG has potential to increase its probiotic properties and this indicates that combination of thiamine and probiotics may be more effective for pathogens, as well as oxidant stress.

**Keywords:** antibacterial, antioxidant, probiotics, thiamine, vitamin B1.

**Acknowledgment:** The authors thank to Chr. Hansen, Turkey for the probiotic strain.

## Antioxidant and Antibacterial Effects of *Lactcaseibacillus rhamnosus* Supplemented with Phytic Acid

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### Abstract:

Probiotics are known to have beneficial effects on the host, when administrated adequately. One of the most commonly studied probiotics over thirty years is *Lactcaseibacillus rhamnosus* GG. This bacterium is acid-tolerant, bile-tolerant, and promotes inhibiting of pathogenic bacteria, as well as modulating the immune system. On the other hand, phytic acid is a six-fold dihydrogenphosphate ester of inositol, mainly occurring in seeds and grains, for which it functions as phosphorus store, as an energy store, as a source of cations and as a source of myo-inositol (a cell wall precursor). It is indigestible for most of the animals but when entering to the body, it can interact with microbiota. Thus, the present study aims to investigate antibacterial and antioxidant effects of combination of *Lactcaseibacillus rhamnosus* GG and phytic acid. For this, *Lactcaseibacillus rhamnosus* GG was grown in the presence of phytic acid (500 µg/mL) and cell-free extract of bacterium was collected, followed by DPPH scavenging assay as antioxidant test and microdilution assay as antibacterial test against *E. coli* and *S. aureus*.

The results showed that the control group of *Lactcaseibacillus rhamnosus* GG, which was grown without phytic acid, had approximately 34% DPPH scavenging activity; however, when it was grown in the presence of phytic acid, its DPPH scavenging activity was found as around 42%. Furthermore, the combination of *Lactcaseibacillus rhamnosus* GG and phytic acid had good antibacterial activity against both *E. coli* and *S. aureus*. While control group decreased the viability of *E. coli* and *S. aureus* to 11.3% and 8.7%, respectively, supplementing with phytic acid further decreased those to 6.9% and 8.2%, respectively.

In conclusion, even though *Lactcaseibacillus rhamnosus* GG has good antioxidant and antibacterial activities, supplementation with phytic acid further enhanced these properties; thus, this combination can be a potential synbiotics.

Keywords: antibacterial, antioxidant, phytic acid, probiotics.

## Pharmacokinetics and bioavailability of florfenicol in geese

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### Abstract

The aim of this study was to determine the pharmacokinetics and bioavailability of florfenicol in geese (*Ansercygnoides*) after intravenous (IV), intramuscular (IM), subcutaneous (SC), and oral (PO) administrations at 30 mg/kg dose. In this study, eight clinically healthy geese were used. The study was performed in four periods according to a crossover design with a 15-day washout period between two administrations. Blood samples were collected at time 0 (pretreatment), 5, 10, 15, 30, and 45 min and 1, 2, 4, 6, 8, 10, 12, 24 and 48 h after drug administration. The plasma concentrations of florfenicol were analyzed using high-performance liquid chromatograph-ultraviolet detection, and pharmacokinetic parameters were estimated by noncompartmental analysis. Following IV administration, terminal elimination half-life ( $t_{1/2\lambda z}$ ), total clearance and volume of distribution at steady state were 2.42 h, 0.29 L/h/kg and 0.84 L/kg, respectively. After IM, SC and PO administration,  $t_{1/2\lambda z}$  was longer than IV administration. The  $C_{max}$  of florfenicol following IM, SC, and oral administrations was 13.89, 9.88, and 6.91 µg/mL at 1, 2, and 1.83 h, respectively. The mean bioavailability following IM, SC, and oral administrations was 80.91, 62.22, and 50.59 %, respectively. This information may help in the use of florfenicol in geese, but the multi-dose and pharmacodynamic studies are needed.

Key words: florfenicol, geese, pharmacokinetic, bioavailability.

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## **Development of Antimicrobial Effective Nasal Formulation and Determination of In Vivo Efficacy**

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### **Abstract:**

Since the detection of Covid-19, priority has been given to the research of antimicrobial and antiviral agents worldwide, and these studies are of great importance. Essential oils and herbal extracts contain natural antimicrobial, antiviral and antioxidant capacity. Thyme essential oil stands out among essential oils with its antibacterial and antifungal properties. The antimicrobial capacity of thyme essential oil is based on the presence and concentration of phenolic compounds. Thymol and carvacrol isomers stand out, and their synergy determines the antimicrobial potential in addition. Olive leaf extract is a biomaterial used as a nutraceutical supplement in food and pharmaceutical products due to its rich phenolic compounds and cheapness. Chitosan is a natural polymer that is biodegradable, biocompatible, mucoadhesive and non-toxic. Thanks to its mucoadhesive feature, it comes to the fore in intranasal applications. Interest in intranasal administration as a non-invasive route for active compounds has increased in recent years. The study aimed to investigate the antimicrobial activity of a nasal formulation containing thyme oil and olive leaf extract encapsulated in chitosan microparticles through intranasal application within the scope of the study. In this context, microparticles (OTC) containing thyme oil and olive leaf extract were prepared using a spray dryer, and their characterization studies were carried out with FTIR, SEM, Zeta Sizer and Master Sizer, and the amount of phenolic compounds they contained was determined. As a result of characterization studies, it was seen that OTCs were in size and shape suitable for intranasal administration. In order to perform intranasal administration, a suitable ointment formulation containing OTC was prepared, and stability tests were carried out. The antimicrobial activity of the final formulation was examined by in vivo experiments, and it was found that the antimicrobial effect of the formulation was higher than the control groups. Within the scope of all studies, it was determined that the nasal formulation containing OTC had an antimicrobial effect and was found suitable for use.

**Keywords:** Antimicrobial activity, chitosan microparticle, intranasal, olive leaf extract, thyme oil

We would like to thank for the financial support received from EGE Bap (Project number: FBG-2020-22521) and Santek Medikal.

*Oral Presentation*

## **Evaluation of Immunomodulatory and Antiviral Effects of Vathasura Kudineer (VSK), a Poly-herbal Formulation of Indian Traditional Medicine in *in vitro* System<sup>#</sup>**

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### **Abstract:**

Chikungunya infection is caused by Chikungunya Virus (CHIKV), an arthritogenic virus that causes joint inflammation. The inflammation continues even after the clearance of viruses from sera and may result in chronic arthritis that may remain for several months to years. In India, herbal formulations are prevalently given during CHIK outbreaks, of which, Vatha Sura Kudineer (VSK), a Siddha (Indian Tradition Medical System) poly-herbal formulation is an important Siddha medicine. This study aimed to evaluate the mode of action of Vatha Sura Kudineer (VSK) during CHIKV infection using an *in vitro* system. We explored the immunomodulatory effect of formulation on LPS-simulation RAW264.7 cells and antiviral effects on the Vero cell line. We prepared ethanol extract to study the antiviral effects and used aqueous extract for evaluating the immunomodulatory effects of VSK. In *in vitro* cell-based assay, we found that the VSK formulation extracts possess antioxidant, anti-inflammatory and antiviral activity. The aqueous extract showed promising immunomodulatory effects where it showed 90 % of direct ABTS radical scavenging activity, significant suppression of ROS generation and enhances the SOD activity at the non-toxic concentration used for the assay; it was also able to suppress NO (Nitric oxide) release, PGE2 inflammatory mediator and inflammatory cytokines (IL-1 $\beta$  and TNF $\alpha$ ) production in LPS-stimulated RAW264.7 cells. The ethanol extract showed around 40% viral reduction at a maximum non-toxic concentration (MNTC) for 48 h of treatment in the co-treatment assay. In conclusion, we provide evidence that the formulation possesses both immunomodulatory as well as antiviral effect against CHIKV.

**Keywords:** Antiviral, Immunomodulatory, Indian Traditional Medicine, Vatha Sura Kudineer.

<sup>#</sup>This work supported by ICGEB core fund and SRF-DBT.

## **Doxorubicin and Zinc Oxide Encapsulated Albumin Nanoparticles Exhibits pH-Sensitive Drugs Release Profile**

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### **Abstract:**

Many drug delivery systems are being studied for biomedical purposes. Among these, nanoparticulate systems are of great interest. Zinc oxide nanoparticles (ZnO NP) are among the few nanoparticles classified as safe by the FDA. It has been shown to have anti-tumoral and antimicrobial effects. In addition, it can also be used in bioimaging due to its unique optical properties. Its use as a drug delivery system continues to be investigated. Albumin (Alb) is a protein synthesized in the liver and abundant in plasma. The use of albumin as a nano drug delivery system has advantages such as being non-toxic, non-antigenic and biodegradable. Doxorubicin (Dox) is a highly effective and widely used anti-cancer drug. However, it has serious side effects such as vomiting, myelosuppression and cardiotoxicity. Therefore, studies are still being carried out on many smart drug delivery systems to reduce the side effects of doxorubicin and increase its therapeutic index. The aim of this work is to synthesize zinc oxide and doxorubicin-carrying nanoparticulate drug delivery system that can have controlled release of the drug especially at acidic region resulting in improved therapeutic index for cancer therapy. In this study, aqueous synthesis of zinc oxide nanoparticle was carried out. Then, the obtained zinc oxide nanoparticles were encapsulated with albumin using desolvation method. Doxorubicin loading was carried out simultaneously with the encapsulation of zinc oxide nanoparticles, and albumin nanoparticles loaded with doxorubicin and encapsulated with zinc oxide nanoparticles (Dox-Alb-ZnO NP) were obtained. Nanoparticles were characterized with SEM, TEM and FTIR. It was found that nanoparticles are in spherical shape. Also, FTIR analysis revealed that encapsulation was successful. Drug loading and desolvation yield was calculated and found as 51.8% and 98.2%, respectively. Cumulative drug release was monitored for 48 hours against buffers at pH 5.5 and pH 7.4. Slower drug release rate was observed at pH 5.5 compared to pH 7.4. When the release study data were evaluated in terms of kinetic modeling, it was found to be suitable for the KorsMeyer-Peppas model. Therefore, it was concluded that the nano drug delivery system is pH sensitive and can be used for chemotherapeutic purposes.

**Keywords:** Zinc oxide nanoparticles, doxorubicin, albumin, drug release, drug loading.

Oral Presentation

## Investigation of the synergistic effect of the mixture of *Artemisia absinthium* and *Centella asiatica* plant extracts on L929 fibroblast cells

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### Abstract:

In recent years, interest in medicinal plants has increased due to the emphasis on natural treatment methods. According to the World Health Organization, there are around 20,000 medicinal plants in the world. *Centella asiatica* (CA) and *Artemisia absinthium* (AA) are some of them. AA is known in traditional medicine for its antidiabetic, antihypertensive, analgesic, antipyretic, antispasmodic, anti-inflammatory and memory enhancing properties, as well as for its wound healing and skin protective effects. CA has been used to treat minor burn wounds, psoriasis, and hypertrophic scars, among many other pathological conditions. The aim of this study is to investigate the synergistic effect of the water extract (5g/100ml water) mixture (50:50%) of the leaves of AA and CA plants on cell migration by in vitro scratch assay method. In addition, the cytotoxicity and antimicrobial activities of AA, CA and AA/CA extracts were examined. In the in vitro scratch assay method, a scratch was created on the petri dishes in which the L929 fibroblast cells were planted, and cell migration and proliferation were followed for 48 hours. It has been determined that the area drawn on the plate where AA/CA extract is applied has a synergistic effect since it tends to close faster than CA and AA extracts. The cytotoxicity of the extracts in L929 fibroblast cells was examined by MTT test, and it was determined that they increased cell viability (>70%) at low concentrations. The antimicrobial activity of the extracts was investigated in *S.aureus* and *C.albicans* strains by disk diffusion method. While AA formed a zone diameter of 6 mm in both species, larger inhibition zones were observed in CA and AA/CA extracts. These results show that AA/CA extract can be used as an effective therapeutic and antibacterial agent in wound healing. However, it is recommended to be confirmed by *in vivo* clinical studies.

Keywords: *Artemisia absinthium*, *Centella asiatica*, cytotoxicity, synergistic effect, antimicrobial activity

## **Total Phenolics and Mineral Composition of Globe Artichoke Leaf and Its Extracts**

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### Abstract:

Globe Artichoke (*Cynara scolymus* L.), belonging to the family of Astericaea, has antioxidant, hepatoprotective and hypoglycemic activities, its leaves has traditionally been used for diuretic and choleric purposes. Therefore the main goal of our study was to determine the total phenolic content of artichoke leaf and its extracts with methanol, ethyl acetate and hexane and their basic nutrients, selected macro (Na, K, Ca, Mg, P) and micro (Zn, Fe, Cu, Mn, Cr, Se, I) elements levels in ICP-MS. Folin Ciocalteu method is used for total phenolic content. In the present study, the total phenolics were found to be 5,735 mg, 0,917 mg and 0,167 mg gallic acid equivalents (GAE/g) in methanolic, ethyl acetate and hexane extract, respectively. In the study macro element concentrations were found in artichoke leaf more than all the extracts and could be presented in descending order as follows: K > P > Mg > Ca > Na by ICP-MS method. Micro elements concentrations of artichoke leaf , (except I and Cr) were significantly higher than all other extract. According to our results we can state that artichoke leaves provide a natural sources of K and Zn, while methanol and hexane extracts are good sources of P and Zn.

**Key words:** *Cynara scolymus* L. leaf extracts, artichoke, minerals, total phenolic content

## Evaluation of Anti-Diabetic Potential of Peptide/Polypeptide and Carbohydrate Fractions of *Aloe barbadensis* Miller: A Preclinical Study

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### Abstract:

Diabetes mellitus is characterized by hyperglycemia and has become a major health burden in the world. Previous studies conducted in our laboratory has revealed that the feeding of standardized *Aloe barbadensis* Miller (*Aloe vera*) gel extract (300mg/Kg BW) to streptozotocin induced diabetic rats was able to alleviate diabetes through restoration of FPG and insulin levels qualitatively and quantitatively. The aim of the study was to understand the role of biomolecules of *Aloe vera* responsible for alleviation of diabetes and the pathways through which these biomolecules work, group-wise fractionation of *Aloe vera* extract was performed. The Polypeptide Fraction (PPF) of *Aloe vera* was obtained through trichloroacetic acid precipitation while the carbohydrate fraction (CF) was obtained through hot water extraction followed by ethanol precipitation. The anti-diabetic potential of the PPF and CF was tested at a dose of 0.450 mg/kg bw and 54mg/kg bw respectively *in vivo* using streptozotocin-induced diabetic Wistar rats. The fasting plasma glucose, insulin, GLP-1, DPP-IV, glycogen content, glycogen synthase, hexokinase and glucose-6-phosphatase levels were studied in diabetic rats. The histopathological studies of the pancreas, small intestine, and liver were carried out for organ-specific effects. The findings observed were that the PPF works through regulation of GLP-1 pathway and CF works through up regulation of glycogenesis and suppression of gluconeogenesis. In results it was observed that the peptide/polypeptide fraction regulates the zonulin levels which helped in decreased intestinal permeability which correlates with decreased excessive proliferation on the epithelium of small intestine. The decreased zonulin levels allowed better release of GLP-1 in diabetic rats. The PPF was also able to inhibit the DPP-IV enzyme thereby allowing prolonged action of GLP-1 for better secretion of insulin. The CF provided insights into the regulation of carbohydrate metabolism wherein the glycogen synthase levels were increased. This helped in improved glycogen content thereby improving the glucose uptake in liver in diabetic rats treated with CF of *Aloe vera*. This study reveals that the *Aloe vera* extract works through different pathways due to presence of different biomolecules like PPF & CF, and these biomolecules work synergistically for the rejuvenation of pancreatic islets for the alleviation of diabetes.

Key words: *Aloe vera*, Diabetes, Peptide/polypeptide, Carbohydrates, Histology

## Investigation of the Effect of Boron on Thyroid Functions and Biochemical Parameters in Hypothyroid induced-Rats

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### Abstract:

Hypothyroidism is often a health problem caused by iodine deficiency. Studies that affect the level of thyroid hormones of boron suggest that boron may have an iodine-like effect. In our study, the effects of boron on thyroid hormones and some biochemical parameters were investigated in rats with hypothyroidism. In the study, 49 Wistar Albino male rats were divided into seven groups (Control (K), hypothyroidism (H), 10 mg/kg boron (B10), 20 mg/kg boron (B20), hypothyroid + 10 mg/kg boron (HB10)), hypothyroidism + 20 mg/kg boron (HB20) and Treatment (T)). Propylcil<sup>®</sup> containing 0.05 mg/kg propylthiouracil (PTU) was added to the drinking water of the four groups (H, HB10, HB20 and T) freshly every day in order to induce hypothyroidism during the first three weeks. In the next three weeks, groups with hypothyroidism were given 10 mg/kg (B10 and HB10), 20 mg/kg (B20 and HB20) boron, and to the treatment group 10 mg/kg Euthyrox<sup>®</sup> (Levotroxin) by gastric gavage, respectively. At the end of six weeks, blood was drawn from the heart under ketamine/xylazine anesthesia from the rats, and then the thyroid tissues were removed and taken into 10% formol. Thyroid hormone (fT3, fT4, TSH, TT3, TT4) analyzes and other biochemical measurements (ALT, AST, ALP, protein, urea, creatinine, cholesterol, triglyceride and glucose) from serum were performed by spectrophotometric method. In addition, thyroid gland tissue was examined histopathologically. According to the findings obtained in the study, TSH level was found to be significantly higher in the hypothyroid groups compared to the control group ( $p < 0.05$ ). When only boron given groups were compared to the control group, only the increase in fT3 level was found to be statistically significant ( $p < 0.05$ ). AST, ALT, ALP activities were found to be higher in the hypothyroid group compared to the control, and hypothyroidism was formed and the activities of these enzymes decreased to values close to control in boron supplemented groups (HB10 and HB20). When the urea level was compared to the control group, it was determined that it increased in the B10 group, but decreased in the hypothyroid group ( $p < 0.05$ ). It was determined that the cholesterol level decreased in the boron given groups compared to the control and hypothyroid groups ( $p < 0.05$ ). It was determined that sodium iodine channels (NIS) immunoreactivity was high in rat groups with hypothyroidism. As a result, it shows that the increased AST and ALP activities in the given rats decreased with boron administration. The decrease in cholesterol level in all boron given groups suggests that boron is effective on lipid absorption and cholesterol synthesis in the liver. In the study, although boron had no effect on fT4, TT3, TT4 and TSH, an increasing effect on fT3 was observed. Measured serum hormone levels are not sufficient to understand the effect of boron on the thyroid gland, and it was concluded that further studies at the molecular level are needed to understand the effects of boron on the thyroid gland.

Keywords: Biochemical parameters, Boron, Hypothyroidism, Histopathology, Rat

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Oral Presentation

## The Comparison Of Effects Of Supplementation Of *Yucca Schidigera* Powder To Diet Effect On Plasma Some Mineral Levels In Sheep

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### Abstract:

Feed additives used in animal nutrition should not have negative effects on animal health and productivity. For this reason, it is important to produce feed additives in a competitive and sustainable manner with the world in terms of both technological and cost, without creating risks in animal production and health. In recent years, researches related to the increasing interest in the use of natural feed additives instead of antibiotics in improving the efficiency of animals and maintaining their health showed that saponins have promising properties in this area. This study is planned to determine effect of *Yucca schidigera* (YS), which is the most natural feed additive, with high saponin content, on sheep blood plasma mineral substance levels. In the study, Merinos male sheep (n=12 head) between 1 and 2 years old was used. Two groups as control (n=6) and experimental (n=6) were designed. The animals were fed for 30 days. While no additive to mixed feed of the control group, 1 500 ppm *Yucca schidigera* powder was added to mixed feed of experimental group. In blood plasma taken from animals at the beginning of the experiment (day 0) and the 30<sup>th</sup> day; Mg, Ca, Fe, Cu and Zn mineral levels were determined by ICP-MS device. On the 30<sup>th</sup> day of the experiment, a decrease (p<0.05) of Mg and Fe levels in control and YS added groups, Ca and Zn values did not change (p>0.05) in two groups. When mineral levels of experimental and control groups, which is determined at the end of 30<sup>th</sup> day, were compared, in terms of the values taken although slight increase of Mg and Zn, slight decrease of Ca, Fe and Cu levels, no significant change (p>0.05) was seen. As a result; These findings revealed that when YS powder is added to ruminant feeds, Mg and Fe levels in blood plasma should be taken into consideration. It was concluded that it is necessary to conduct more detailed studies related with this subject.

Keywords: Sheep, saponin, mineral substance, feed

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## **Induction Of Hepatotoxicity By Anti-Tb Drug Disturbed The Mitochondrial Function**

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### **Abstract:**

Tuberculosis is still a major challenge for the health care system in developing countries like Pakistan. It can be treated by a number of antibiotics including pyrazinamide, isoniazid, rifampin, streptomycin, and ethambutol. Pyrazinamide reduces the time duration required for the treatment of TB. Its therapeutic effect also leaves some toxicological effects like hepatotoxicity. The study was designed to investigate the role of mitochondrial pathogenesis in pyrazinamide-induced liver injury. Human liver cancer HepG2 cell line and female Wistar rats were used for in vitro and in vivo studies. In vitro studies on HepG2 cell line showed that pyrazinamide could induce apoptosis, mitochondrial depolarization, ROS production and mitochondrial fragmentation. Mitochondrial fragmentation is associated with an imbalance in mitochondrial dynamics. Images from immunofluorescence and PCR results showed that pyrazinamide could increase mitochondrial fission and decrease the mitochondrial fusion that could lead to mitochondrial fragmentation. In vivo studies on female Wistar rats showed the apoptosis in liver tissues exposed to pyrazinamide. Rat liver tissues treated with pyrazinamide showed an increase in reactive oxygen species level i.e. MDA, GSH, Catalase, and SOD. PCR results showed an increase in mRNA expression of mitochondrial fission protein. Mitochondrial fission was associated with the release of apoptotic marker into the cytoplasm that led to the activation of caspase-3. MitoQ, a mitochondrial oxidative stress scavenger, protected the hepatocytes from pyrazinamide induced mitochondrial injury. Taken together, our results showed that mitochondrial injury was the main cause of pyrazinamide-induced hepatotoxicity. Protecting mitochondria from pathogenesis could be a main target in the alleviation of pyrazinamide-induced hepatotoxicity.

**Keywords:** pyrazinamide, mitochondria, hepatotoxicity

## Exploration of *Zingiber officinale* effects on growth performance, immunity and gut morphology in broilers

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### Abstract:

The current study aimed to determine the effects of different levels of *Zingiber officinale* as a herbal feed additive on growth performance, carcass characteristic, serum biochemistry, total bacterial count (TBC), gut morphology, and immunological parameters of broilers. A total of 1500, day-old broiler chicks (Hubbard) were equally accredited to five treatment groups, each with six replicates (50 birds/replicate). Five experimental diets were prepared using basal diet i.e. with antibiotics positive control (PC), 3g/kg ginger (group A), 6g/kg ginger (group B), 9g/kg ginger (group C) and without antibiotics negative control (NC). Group A and C showed significantly ( $p < 0.05$ ) higher feed intake (FI) as compared to other groups. Group C showed significantly ( $p < 0.05$ ) lower Total bacterial count (TBC) followed by group B as compared to NC. Carcass characteristics showed non-significant effects among different treatments. Mean villi length and width were significantly ( $p < 0.05$ ) higher in all ginger supplemented groups as compared to the control groups. Blood serum parameters including cholesterol, triglycerides, and low-density lipoproteins (LDL) were significantly ( $p < 0.05$ ) lower in groups B and C in comparison with the control groups. Whereas high-density lipoproteins (HDL) was significantly higher in group B as compared to the others. In conclusion, ginger supplementation @0.6% in the basal diet significantly improved growth performance and gut morphometry of broilers. It also showed a positive impact on cholesterol, triglycerides and gut microbes. Therefore, ginger could be a better substitute for antibiotic growth promoters.

Keywords: Broiler, Cholesterol, Ginger, Performance, Phytobiotics

## **Hematological and biochemical studies in healthy camel bulls in relation to season breeding activity**

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### **Abstract:**

Haematological and biochemical parameters are of great interest for the control of physiological adaptation mechanisms according to the breeding activity. Analysis of biochemical indices and hematological parameters was carried out in order to investigate changes in homeostasis and eventually functional alteration processes during the different breeding seasons of 20 adult and healthy camel bulls from an extreme arid environment El Oued region in Algeria. Higher red blood cell count (RBC) ( $8,04 \pm 1,59 \times 10^6 \mu\text{L}^{-1}$ ) with decreased packed cell volume (PCV) ( $16,40 \pm 0,33 \%$ ) and mean corpuscular volume (MCV) ( $30,40 \pm 1,09 \text{ fL}$ ) during the no rutting season suggested a pronounced state of dehydration compared to the rutting season. Similarly, low levels of hemoglobin concentration (HGB) ( $8,44 \pm 0,90 \text{ g dL}^{-1}$ ) and mean hemoglobin content (MCHC) ( $43,99 \pm 3,48 \text{ g dL}^{-1}$ ) associated with high of MCV ( $35,70 \pm 0,69 \text{ fL}$ ) during the rutting season indicate a progressive hemoglobin deficiency due to high sexual activity associated with intense mating behavior. During the non rutting season, high concentrations of Triglyceride ( $0,51 \pm 0,40 \text{ gr L}^{-1}$ ) reflect the accelerated lipid catabolism. Similarly, a high level of ASAT ( $123,14 \pm 85,56 \text{ UI L}^{-1}$ ) during this season would be due to accelerated glycolysis and the low calcium concentration reflects the state of renal function adaptation to dehydration. In addition, high blood levels of urea ( $31,00 \pm 11,68 \text{ mg dL}^{-1}$ ) and uric acid ( $0,58 \pm 0,39 \text{ mg dL}^{-1}$ ) may be caused by excess in protein often lacking fermentable energy with increased seasonal metabolic activity during the mating season. These results confirmed by a high level of Calcium ( $10,34 \pm 0,82 \text{ mg dL}^{-1}$ ) and Iron ( $33 \pm 12,13 \mu\text{g dL}^{-1}$ ) resulting from the availability of mineral-rich plants. Finally, the rise in the creatine kinase ( $59,75 \pm 32,34 \text{ UI L}^{-1}$ ) level during the non mating season indicates metabolic changes in muscle tissue particularly linked to increased neoglucogenesis. Hematological and biochemical controls obtained in this study showed that are important indicators of reproductive physiology of breeding camel males and they can be implemented to monitoring health statue during reproductive life of camel genitors with high genetic potential.

**Keywords:** hematology, biochemistry, camel bulls, season, breeding.

## **Comparison of Race Earnings and Degrees of Arabian and Thoroughbred Racehorses in Turkey**

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### **Abstract:**

The flat race is the most common type of horse racing that the horse's speed, endurance, the ability of the jockey, choosing the right training methods, and tactics are important. A racing performance could be described as the racing skills of racehorses in competitions.

Maiden race, which is a kind of flat race, refers to the type of race that only horses have not won a race during their racing life can only participate in. The aim of this research is to evaluate the data on the effect of breed, gender, and track-type on the earnings and degrees in the maiden races. The data within the scope of the research were obtained from the official website of the Jockey Club of Turkey in January 2022. In the study, earnings and degree data of 3 years old, female and male, Thoroughbred and Arabian horses raced on turf track and polytrack, in Istanbul between 2019-2021, 1400 meters, Maiden races were used. Degree and earning differences between breed, track, and gender were analyzed. The analyses of data were performed by independent samples t-test using SPSS 18. Earnings from the races were evaluated, no differences were found on the basis of breed, gender, and track variables. The degrees of racehorses were examined, it was found that Thoroughbreds were faster in all genders and track types ( $P<0,001$ ). When the gender-degree relationship was evaluated, it was revealed that the Arabian stallions were faster on the turf track ( $P<0,05$ ). When the track-degree relationship was evaluated, the results showed that Arabian stallions ( $P<0,001$ ); Arabian mares ( $P<0,05$ ), Thoroughbred stallions ( $P<0,05$ ) and Thoroughbred mares ( $P<0,01$ ) revealed that they were fast on the turf track. Determining the factors affecting the earnings and degrees of horses is important for the welfare, as it is decisive in many areas from horse management to training. As a result; apart from the scope of the study, there are many factors such as jockey, trainer, genetics, health history, trauma history, breeding system, temperament, which add bonuses and degrees of horses. It would be useful to examine other factors in future studies.

**Keywords:** Arabian Horse, earnings, flat race, Thoroughbred race horses, welfare.

## **An Indigenous Animal Genetic Resource: Oriental Pigeon**

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### **Abstract:**

This study aimed to determine the morphological characteristics of the Oriental pigeon, which is one of our indigenous animal genetic resources. The research was carried out on the oriental pigeon genotype in the hands of the breeder in Tekirdağ, Balıkesir provinces, and Lüleburgaz district, with the ethics committee decision of Tekirdağ Namık Kemal University (2017/09). The study consisted of 100 pigeons (52 male and 48 female) from seven different breeders. Each pigeon was morphologically examined in detail and body measurements were determined. Three eye colors (white- 75 %, white with yellow speckles - 15 %, white with red speckles 10 %) and six basic plumage colors (red- 29 %, black- 25 %, white- 23 %, yellow- 11 %, ashy or smoky- 5 %, tiger or speckled- 7 %) were identified in this pigeon genotype. Head length, beak length, beak depth, thoracic perimeter, tarsus diameter were significantly affected by sex and age group ( $P < 0.01$ ;  $P < 0.001$ ). Except for body length, male pigeons showed higher values than female pigeons. As a result of the present study, it is possible to say that the plumage color of Oriental pigeons is higher in percentages of red, black and white, and the body structure is larger than most other indigenous pigeon genotypes/breeds (Bursa oynarı, Cakal, Mulakat, Thrace roller, Alabadem and Muradiye Dönek pigeons). We suggest that the Oriental pigeon genotype should be preserved as an indigenous breed. Also, the relationship of the Oriental pigeon genotype with other pigeon genotypes bred in the Marmara region, and then with other breeds in Turkey should be revealed by genetic studies.

**Keywords:** Indigenous genetic resource, pigeon, Turkey

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## **Live Weight Changes of Angora Goat Kids on Different Pasture**

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### **Abstract:**

Angora goat (AG) is an important genetic source of Türkiye. It is best adapted to Ankara region. The main yield of AG is mohair. In this study, the performance of AG kids was investigated which fed on pastures at different altitude after the weaning period. The project was carried out in the animals followed within the scope of the Ankara Goat Conservation Project on the Breeder Conditions conducted by General Directorate of Agricultural Research Policies (GDARP). For this purpose, birth, 90<sup>th</sup> and 180<sup>th</sup> days live weights (LW) of 67 kids were investigated between August and October fed in the pastures of Yalım Village in Kalecik District of Ankara. Kids remained with their mothers until 4 months of age and were fed with breast milk. They were weaned at the age of 4 months and divided into two groups; river (R, n: 30) and plateau (P, n: 37). The river group were fed in the pasture at an altitude of 700 m at the coordinates 39.980794, 33.415731 and drank from the Kızılırmak river water. The plateau group, on the other hand, fed on the pasture at an altitude of 1300 m at the coordinates 40.025005, 33.374347 and drank spring water. While LW at birth and 90<sup>th</sup> days was higher in the river group than in the plateau group ( $p<0.05$ ), LW at 180<sup>th</sup> days was higher in the plateau group ( $p<0.05$ ). The LW of R group at birth, 90<sup>th</sup> and 180<sup>th</sup> days were respectively;  $2.12\pm0.02$ ,  $15.59\pm0.050$  and  $18.77\pm0.43$  kg. The LW of P group at the birth, 90<sup>th</sup> and 180<sup>th</sup> days were respectively;  $2,03\pm0,02$ ,  $13,95\pm0,41$  and  $21,51\pm0,56$  kg. As a result of the study, it was determined that the growth of grass in the high pasture is better and more efficient in the development of kids. It has been determined that the development of kids fed on high altitude pasture is better than low altitude.

**Keywords:** Angora goat, kid, pasture

**Acknowledge:** The project consists of the data received within the scope of the Ankara Goat Conservation Project on the Breeder Conditions carried out by GDARP, and the author thanks GDARP

## Comparison of Egg Production and Some Egg Quality Characteristics in Four Varieties of Japanese Quail (*C. japonica*) with Different Feather Colour

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### Abstract:

The aim of the study was to compare the egg production and some egg quality characteristics of different quail varieties with different plumage colors (white, dark brown, yellow, and wild type). Egg production was investigated during the first four weeks following the onset of laying. External quality characteristics include egg weight, egg length, egg width, egg shape index, membranous shell weight, shell surface area, and shell ratio; internal quality characteristics were determined as white height, width, length, and index, yellow height, width, length, and index, white pH value, Haugh unit, and internal quality unit (IQU). When the egg weight was examined in the first week, no statistical difference was observed between the groups, while a significant difference developed in terms of egg weight in the 2nd, 3rd, and 4th weeks ( $p < 0.001$ ). The lowest egg weight was observed in the variety with yellow plumage in all weeks. Egg height and width were significantly different between weeks and varieties ( $p < 0.01$ ). The egg shape index differed between weeks ( $p < 0.001$ ) and color variations ( $p < 0.05$ ). The wild type had the highest average egg weight ( $10.50 \pm 0.13$ ) and the varieties with yellow plumage had the lowest ( $9.76 \pm 0.09$ ). No difference was observed in terms of yellow height, white width, yolk length, yolk width, pH, Haugh unit, white and yellow indices among the examined internal quality traits at all weeks. However, egg white height was found to be significant ( $p < 0.05$ ) among color varieties. Egg white height was lowest in varieties with white plumage ( $4.39 \pm 0.09$ ), and highest in varieties with wild-type plumage ( $4.91 \pm 0.18$ ). Similarly, the white length was significantly different ( $p < 0.048$ ) among the varieties; the lowest value was observed in the variety with yellow plumage ( $42.93 \pm 0.56$ ) and the highest value was observed in the variety with dark brown plumage ( $45.68 \pm 0.76$ ). As a result, it was determined that the egg production and quality characteristics of quail varieties with different plumage colors also varied. In the enterprises where egg-oriented breeding is planned, the idea that breeding should be done according to the desired feature has developed in the selection of the quail variety to be used.

Keywords: Quail, feather colour variety, egg production, egg quality.

## **Trace Element Bioaccumulation And Health Risk Assessment Derived From Frog Leg Consumption**

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### **Abstract:**

Amphibians, which can live in aquatic and terrestrial environments, are a good indicator of pollution in these areas. Although frog legs are consumed in many cultural cuisines, they are rarely used in studies of metal accumulation. Because of its usage in the human diet, indeed, it is an important tissue for evaluating metal accumulation from the environment. Herein, the quantities of trace elements (Cd, Pb, Cu, Zn, As, Co, Cr, Ni, Mn, V) were measured in the edible tissues (muscles) of an amphibian species by sampling from two frog farms in Turkey. *Pelophylax ridibundus*, which is an aquatic species that is thought to be able to absorb pollution from its habitat, was used in the study. It was aimed to assess possible health hazards for humans by frog legs consumption comparing with the toxicological limit values including provisional tolerable weekly intake (PTWI), target hazard quotient (THQ), and Hazard Index (HI). In general, the average values ( $\mu\text{g kg}^{-1}$ ) of trace elements were Zn (3.437.62) > Pb (69.22) > Cu (66.72) > As (24.24) > Cr (11.47) > Ni (6.94) > Cd (6.51) > Co (2.97). The results showed that it did not exceed the maximum risk limit and that its edible tissues did not have a potential carcinogenic health risk in terms of human health.

**Keywords:** amphibians, environment, human health, pollution, marsh frog.

# The present research has been financially supported by the Scientific and Technological Research Council of Turkey (TUBITAK), (grant No: 2209A).

## The Effect of Thymoquinone at Proliferative and Toxic Doses on Ripk1 Gene Expression in Kidney Cells

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### Abstract:

The study focused on thymoquinone, one of the main terpenes known as black cummin essential oil. The possibility that TQ may be harmful as well as beneficial on healthy kidney cells has been investigated. We investigated the effect of thymoquinone on necrosis at beneficial and toxic doses. For this purpose, NRK-52E rat kidney epithelial cell line was used as material in the study. NRK-52E cells were proliferated by systematically passaged in an appropriate medium under in vitro conditions. Proliferative and toxic doses were determined according to the results of the MTT cell viability test performed to determine the proliferative (TQp-10µM) and toxic (TQ<sub>IC50</sub>-60µM) values of TQ at the 24<sup>th</sup> and 48<sup>th</sup> hours. It consists of 6 groups as 24<sup>th</sup> hour control, TQp, TQ<sub>IC50</sub> and 48<sup>th</sup> hour control, TQp, TQ<sub>IC50</sub> groups. Ripk1 gene expressions from necrotic genes were measured by RT-qPCR in obtained RNA samples at 24 and 48 hours of these doses. Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) was used as the internal control gene in PCR. The fold change was found using the formula  $2^{-\Delta\Delta Ct}$ . According to the results of this analysis; It was determined that high dose TQ-induced necrosis showed activity in NRK-52E kidney cell line. There was a slight increase in Ripk1 gene expression in the 24<sup>th</sup> hour TQ<sub>IC50</sub> group and a higher increase at 48<sup>th</sup> hours. Expression was found to be low in all other groups. As a result, it was concluded that TQ was safe at proliferative concentration at 24 and 48 hours.

**Keywords:** cell line, necrosis, NRK-52E, thymoquinone

*Oral Presentation*

## **The Effects of Storage Method and Some External Quality Characteristics on Weight Loss in Guinea Fowl's Eggs**

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Abstract:

The aim of this study is to examine the effects of storage method, egg shell color and egg shape index on egg weight loss and keet weight in different periods of storage and hatching in Guinea fowl (*Numidae meleagris*). The study consisted of 142 Guinea fowl eggs. The eggs were numbered and divided into 2 groups (light: 1, dark: 2) to their shell colour, and half of the eggs were placed in a plastic bag with no air and the other half in hay and kept at room temperature for 7 days. Egg shape index calculated with egg width and length and after the calculatings, eggs were divided into 3 groups as sharp (<77%, 58 eggs), normal (77-80%, 61 eggs) and round (80-100%, 40 eggs). The examined characters determined as weight before and after storage, 13th and 26th days of incubation and hatching keet weight. The General Linear Model was used as the statistical model. Statistical model for each dependent character included shell color, storage shape and egg shape index and binary interactions. Storage method was found to be significant on total storage weight loss ( $p<0,001$ ). It was observed that the weight loss in eggs kept in an airtight bag was less than eggs kept in hay. No significant effects of egg shape index and egg shell color were observed on weight loss before storage, on the 13th and 26th days of hatching. The interaction of color and shape index on weight after storage was insignificant ( $p>0.05$ ). Storage method and shape index interaction on keet hatch weight was observed to be significant ( $p<0.05$ ). Generally, the average egg weight in guinea fowls' was determined as 41,31 g. The weight loss of the eggs at hatching is about 13% and the average hatching weight of the keet is 26,04 g. As a result of the study, it was reported that storage method was have effect on weight loss and keet weight but egg shell color and egg shape index did not have direct effects on hatching weight loss and keet hatch weight.

Keywords: Guinea fowls, storage method, hatching, keet, egg shape index.

## Comparative Binding Studies of Radiolabeled Bisphosphonates to Hydroxyapatite Bone Minerals

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### Abstract:

Early detection of bone cancer is critical for treating symptoms, minimizing pain, and increasing overall quality of life. It is significant to develop novel radiopharmaceuticals with high labeling efficiency and hydroxyapatite binding for the diagnosis of bone cancer. In nuclear medicine clinical routine, technetium-99m labeled methylene diphosphonate ( $[^{99m}\text{Tc}]\text{Tc-MDP}$ ) is used for bone cancer's diagnosis. The aim of this study is to examine the binding of  $^{99m}\text{Tc}$ -labeled bisphosphonates to hydroxyapatite minerals in bone in comparison with  $[^{99m}\text{Tc}]\text{Tc-MDP}$ . For this purpose, alendronate (ALD), ibandronate (IBA), risedronate (RSD) and zoledronate (ZLD) were selected as bisphosphonates. The bisphosphonates were radiolabeled with technetium-99m ( $^{99m}\text{Tc}$ ) under appropriate conditions at room temperature and were subjected to quality control studies using radioactive thin layer chromatography (RTLC). Then, binding studies to hydroxyapatite minerals with radiolabeled bisphosphonates were carried out and the binding efficiency were determined using a gamma counter. The radiochemical purity of all bisphosphonates labeled with  $^{99m}\text{Tc}$  was found to be greater than 95%. While the hydroxyapatite binding of  $[^{99m}\text{Tc}]\text{Tc-MDP}$  was found as  $63.10\pm 3.0\%$ , the hydroxyapatite binding of  $[^{99m}\text{Tc}]\text{Tc-ALD}$ ,  $[^{99m}\text{Tc}]\text{Tc-IBA}$ ,  $[^{99m}\text{Tc}]\text{Tc-RSD}$  and  $[^{99m}\text{Tc}]\text{Tc-ZLD}$  were found as  $88.39\pm 5.43\%$ ,  $83.70\pm 3.67\%$ ,  $75.48\pm 2.79\%$  and  $84.26\pm 4.25\%$ , respectively. According to, binding affinities of bisphosphonates to hydroxyapatite minerals were as follows:  $[^{99m}\text{Tc}]\text{Tc-ALD} > [^{99m}\text{Tc}]\text{Tc-ZLD} > [^{99m}\text{Tc}]\text{Tc-IBA} > [^{99m}\text{Tc}]\text{Tc-RSD} > [^{99m}\text{Tc}]\text{Tc-MDP}$ . Consequently, considering the high radiolabeling activity and binding to hydroxyapatite minerals of bisphosphonates other than  $[^{99m}\text{Tc}]\text{Tc-MDP}$ , they are each likely to be an agent that can be used clinically in the diagnosis of bone cancer.

Keywords: bisphosphonates, technetium-99m, radiolabeling, hydroxyapatite binding.

*Oral Presentation*

## **Morphological investigations on *Pseudoplatyophrya terricola* Foissner, 1985 (Ciliophora, Colpodea), a new record for the ciliate fauna of Turkey**

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### **Abstract:**

The ciliate *Pseudoplatyophrya terricola* was isolated from moss samples collected from around the steam shafts in the Nemrut Caldera. The moss samples were dried in shade for one month and non-flooded Petri dish cultures were prepared from them. After 5-7 days of preparation of cultures, the ciliates in the fluid samples taken from the Petri dishes were examined using live and silver impregnation techniques, and their morphological and morphometric characterizations were revealed. *Pseudoplatyophrya terricola* is characterized by 25–30 x 12–18 µm in size, ellipsoidal to ovoid body outline, globular or slightly oval macronucleus located in center of the cell, one elongated micronucleus adjacent to the macronucleus, one contractile vacuole located near the posterior end, cortex furrowed along the somatic kinety, cytoplasm colorless and contains spherical shaped compact food vacuoles, 10–11 somatic kineties with 7–8 µm long cilia, some somatic kineties (K3, K4) shortened at post oral area, one caudal cilium about 15 µm in length, semi-circular paroral membrane with 18–20 basal bodies surrounds the right side of oral area, adoral organelle consist of 3–4 rows of basal bodies. No extrusome was observed. Although *Pseudoplatyophrya terricola* has been isolated from soil samples in several parts of Europe so far, and it was isolated, described and recorded from moss samples for the first time in Turkey with the present study.

**Keywords:** *Pseudoplatyophrya terricola*, Ciliophora, new record, moss ciliates, Turkey

*Oral Presentation*

## **Comparison of Real-time PCR and culture method in the diagnosis of *Brucella* spp.**

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### Abstract:

Brucellosis is a common zoonotic disease that causes economic losses in animal husbandry in Turkey and in the world. Culture and serological methods used in the conventional diagnosis of Brucellosis require a long time procedure and may result in false negativities. Alternative methods that provide rapid and reliable diagnosis are always desirable in the eradication of brucellosis. In this study, it was aimed to investigate *Brucella* spp. in cattle in Turkey by culture and Real-time PCR. For this purpose, a total of 73 samples, 31 of which were fetal stomach contents and 42 vaginal swab of aborted cattle samples, were used as material. The samples were inoculated on the serum dextrose agar and Skirrow agar for the *Brucella* spp. isolation. The same samples were then subjected to the Real-time PCR for comparison. Out of the samples, 11 (%15.06) were found *Brucella* spp. by culture while only 8 (10.95%) of them were confirmed as *Brucella* spp. via Real-time PCR. When considering the culture as the gold test, the diagnostic characteristics of the Real-time PCR have emerged as follows; 72.73% sensitivity, 95.38% specificity and 92.11% accuracy. As a result, real-time PCR can be used as an alternative method to the culture, which has disadvantages at times and workload in the diagnosis of brucellosis.

Keywords: *Brucella* spp, real time PCR, cattle

## The Relationship Between Serum Selenium Level and Muscle Mass in Type 2 Diabetic Geriatric Women

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### Abstract:

Insulin resistance, which causes many metabolic abnormalities, also causes deterioration in protein regeneration in skeletal muscle, thus causing protein-muscle breakdown and development of sarcopenia. Selenium deficiency, which plays an important role in muscle function, is more common in patients with Type-II diabetes mellitus (T2DM). In this study, the relationship between muscle mass (MM) and selenium in women with T2DM was investigated. 72 diabetic female patients aged 65-85 years who applied to outpatient clinic were included in the study. Patients under 65 years of age and over 85 years of age and those with secondary disease that may cause sarcopenia were not included. Physical examinations were performed, and selenium levels were analyzed in addition to blood tests. Height, weight, upper arm, and calf circumference were measured. MM was measured by bioimpedance analysis method. Patients were divided into 3 groups according to MM measurement as  $\geq 6.76 \text{ kg/m}^2$ : normal,  $5.76-6.75 \text{ kg/m}^2$ : moderately decreased,  $\leq 5.75 \text{ kg/m}^2$ : severely decreased. Patients were divided into two groups according to their selenium  $\geq 85 \text{ mg/dl}$ : Normal and  $< 85 \text{ mg/dl}$ : Decreased. A multiple linear regression model was used to evaluate the independent relationship between MM and selenium. Significance level was determined as  $p < 0.05$ . The mean age was  $69.01 \pm 9.2$  years, MM was  $6.94 \pm 1.1 \text{ kg/m}^2$ , and selenium level was  $92 \pm 10.6 \text{ mg/dl}$ . When patients are divided into two groups as  $\geq 85 \text{ mg/dl}$  and  $< 85 \text{ mg/dl}$  according to their selenium levels, MM ( $p < 0.036$ ) and upper-arm circumference ( $p < 0.001$ ) and calf circumference ( $p < 0.05$ ) were statistically different. When the patients were then divided into 3 groups according to MM; selenium level ( $p < 0.001$ ), HbA1c ( $p: 0.036$ ), glucose ( $p < 0.05$ ), upper-arm circumference ( $p: 0.041$ ), calf circumference ( $p < 0.001$ ) and sodium levels ( $p: 0.019$ ) were statistically different between the three groups. In correlation analysis; there was a statistically significant positive correlation between MM and selenium level ( $r: 0.314$ ,  $p: 0.041$ ), upper arm circumference ( $r: 0.615$ ,  $p < 0.001$ ) and calf circumference ( $r: 0.485$ ,  $p < 0.001$ ) and negative correlation between MM and HbA1c ( $r: -0.332$ ,  $p: 0.005$ ). A close relationship was found between selenium deficiency and MM in geriatric women with T2DM. It should not be focused only on glycemic control in diabetic patients, care should be taken in terms of selenium and muscle wasting, which have many metabolic functions.

Keywords: type 2 diabetes mellitus, selenium, muscle mass

## AST, ALT, and CK Levels of the Patients Followed Up in the Burn Intensive Care Unit by Burn Type and Course During the Treatment Process

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### Abstract

Aim: Tissue damage was tried to be evaluated by determining the AST, ALT, and CK levels of the patients according to the burn type and the course of the treatment process. Patients who were hospitalized within the first 24 hours after burns between July 2019 and January 2022 in Eskişehir City Hospital Burn Center Intensive Care were evaluated. Those whose hospitalization period is longer than 5 days are included in this study. Age, gender, chronic diseases, burn type, and biochemical values were taken on the 1st, 3rd, and 5th days of hospitalization, and AST, ALT, CK levels were recorded. 132 patients were included in the study, 71.9% were male and 28.1% were female. The mean age was found to be 35.8 (0-92). According to the type of burn; electrical burns 15.2%, flame burns 28.8%, scald burns 32.6%, contact burns 9.1%, chemical burns 3.7%, flame-inhalation burns 10.6% detected. AST value 11-25, ALT value 7-28, CK value 34-131 IU/L ranges were accepted as normal. A significant increase was found in AST, ALT, and CK levels only in electrical burns and flame-inhalation burns. Due to electrical injury, it is very difficult to determine the degree of burn and the destruction of deep tissues in patients. Electrical burns cause damage by affecting the tissues along the path of the current. Tissue damage occurs as a result of the heat increase caused by the electric current. Serum CK levels increase secondary to muscle wasting. As a result of this study, it can be said that the highest tissue damage was observed in electrical burns, and AST-ALT and CK levels increased in flame-inhalation type burns due to the liver and skeletal muscle hypoxia. Each type of burn has its unique damage and treatment and follow-up. We believe that this study will contribute to the fluid resuscitation, determination of the anesthetic agents to be applied, and the regulation of treatment modalities, as well as the treatments to be given to the burn area according to the burn type.

Keywords: *burnt, tissue damage, CK, ALT, AST*

## **Glabridin Induces Intrinsic Apoptotic Signaling Pathway and Cell Cycle Arrest in A549 Non-Small Cell Lung Cancer and PC-3 Prostate Cancer Cells**

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### **Abstract**

Glabridin is an active flavonoid that extracted from *Glycyrrhiza glabra* (licorice), and it has a wide range of biological properties, including antibacterial, antifungal, neuroprotective, antiatherosclerotic, antiosteoporosis, antiobesity, immunomodulatory, antitumor, and anticancer activities. However, the anticancer effect of glabridin on various cancer cells have been identified, mechanism of glabridin in cancer proliferation, migration and apoptosis through signaling pathways still remain partly unknown. Thus, the cancer prevention effects of glabridin on lung and prostate cancer cells and the underlying molecular mechanisms were investigated in the presented research. MTT colorimetric assay was conducted for revealing cell proliferation and cytotoxic activity. The cell apoptosis rate was identified using the Annexin V-FITC/PI double staining through flow cytometric assay. Additionally, western blot analysis was performed to evaluate quantification of the proteins. Glabridin exerted significant inhibition of cell metastasis via decreasing cancer cell migration and effective inhibition on cell proliferation in A549 and PC-3 cells. In addition, it was demonstrated that glabridin treatment suppresses cell viability and angiogenesis in the cancer cells. The results of flow cytometric assay showed that glabridin induced apoptosis dose-dependently via increasing sub-G1 phase cell, phosphatidylserine externalization, and caspase (caspase-3,-8,-9) activation. Accordingly, it could be concluded that glabridin induces apoptosis in A549 and PC-3 cells through effecting cancer-related signaling pathways and caspase proteins, therefore glabridin could be a potential phytochemical for cancer therapy.

**Keywords:** *Glycyrrhiza glabra*, cell cycle arrest, apoptosis, glabridin, signaling pathway, caspase

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## **Effect of Age, Gender, Cancer and Bedridden on Homocysteine Levels**

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### **Abstract:**

The aim of our study is to examine the effects of age, gender, cancer and sedentary life on homocysteine levels used in clinical practice in combination with cardiovascular risk markers. 266 people between the ages of 3 and 93 were included in our study. Of these 266 people, 109 are male and 157 are female. In addition, 120 of the 266 people are bedridden patients and 146 of them are healthy individuals. While 78 of these 120 patients were diagnosed with cancer, the others consisted of patients without a diagnosis of cancer. Homocysteine analysis was performed in the immunochemistry module (Roche diagnostics) of the Cobas®8000 analyzer using electrochemiluminescence technology. Correlation analysis was performed to see the relationship between homocysteine levels and age of 266 individuals. A positive correlation was found between the homocysteine levels of the individuals and their age ( $r=0.610$ ,  $p<0.001$ ). Homocysteine levels in male individuals were  $13.97\pm 5.32$   $\mu\text{mol/L}$ , while homocysteine levels in female individuals were  $15.17\pm 8.30$   $\mu\text{mol/L}$ . No significant difference was found ( $p>0.05$ ). Homocysteine levels of patients diagnosed with cancer ( $21.02\pm 6.46$   $\mu\text{mol/L}$ ) were found to be significantly higher than homocysteine levels of individuals who were not diagnosed with cancer ( $12.98\pm 6.39$   $\mu\text{mol/L}$ ) ( $p<0.001$ ). Homocysteine levels of bedridden patients ( $22.19\pm 8.26$   $\mu\text{mol/L}$ ) were found to be significantly higher than homocysteine levels of non-bedridden individuals ( $11.00\pm 2.5$   $\mu\text{mol/L}$ ) ( $p<0.001$ ). As a result, while age, cancer and being bedridden were found to have an effect on homocysteine levels, no effect of gender was found.

**Keywords:** homocysteine, age, gender, cancer, bedridden,

Oral Presentation

## A Cardiac Glycoside of *Nerium oleander* L. Downregulates TLR1, TLR6 and MYD88 Genes in Human Endometrial Carcinoma Cells

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### Abstract:

Cancer is one of the major diseases that cause human death. Endometrium cancers rank as the sixth most common neoplasm in women global. *In vitro* studies are very considerable to understand the molecular mechanisms in cancer search. Toll like receptors (TLRs) are the innate immune receptors, responsible for the identification of pathogens. Previous studies indicated an association between TLRs and various cancers. TLR expression in cancer cells has been correlated with cancer progression, apoptosis and survival. Plant-derived natural products such as the phenolics, alkaloids and terpenoids have recently gained attention due to the growing request for discovering novel anti-cancer drug candidates. *Nerium oleander* L., which is a member Apocynaceae family, has been historically used in the treatment of leprosy, hemorrhoids and snake bites. Oleandrin is one of the cardiac glycosides obtained from *N. oleander*. This study aimed to investigate the effects oleandrin on TLRs pathway genes in Ishikawa human endometrial carcinoma cells. XTT proliferation test was performed at 24, 48 and 72 hour intervals after the treatment with oleandrin. According to XTT proliferation test results, IC<sub>50</sub> dose was determined as 75.3 nM at 48 hour for Ishikawa cells. Oleandrin was found to be cytotoxic and significantly reduced the viability of in Ishikawa cancer cells. Total RNAs were isolated from dose group and the control group, then cDNAs were synthesized. Expression profile of the TLRs (1-10) and MYD88 genes were determined by RT-qPCR. ACTB was used as a reference gene in the study. Oleandrin treatment significantly decreased the expression of TLR1, TLR6 and MYD88. Other TLRs expression did not differ significantly. In conclusion, oleandrin effected on TLR signaling pathway by changing expression levels of TLR1, TLR6 and MYD88 genes in Ishikawa cells. However, further molecular biological analyzes are required to explain these mechanisms.

Keywords: endometrial carcinoma, oleandrin, toll like receptors.

## **Melatonin Levels in Women with Systemic Lupus Erythematosus**

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### **Abstract:**

**Aim:** Systemic lupus erythematosus (SLE) is a multisystem autoimmune disease that can affect almost any organ system such as the skin, joints, nervous system, kidneys, heart, lungs and the serous membranes. The aim of this study is to investigate the role of serum melatonin concentrations in the development of SLE in women and its correlations with laboratory parameters. Twenty-eight SLE female patients and 20 healthy women as control group were included in the study. Daily serum melatonin levels were investigated in all participants. The diagnosis of serum melatonin concentrations were determined by specific ELISA kits according to the manufacturer's recommendation (BT LAB, Human Melatonin ELISA Kit, the limit of detection was 5ng/L). ANA determination was performed using the indirect immunofluorescence (IIF) method with the HEp-20-10 liver biochip (Monkey) (Euroimmune AG, Luebeck, Germany) kit. The mean age of thirty female patients with SLE was 44,75±14,41 years. There was no significant difference in age distribution between SLE patients and normal controls. SLE patients showed significantly lower daily melatonin levels in comparison to healthy women (16.47±4.03 ng/L vs. 42.70±3.84 ng/L, p=0.001). Further we could not observe significant interrelations between the plasma melatonin concentrations and SLE disease activity but we also deduced that the lowest mean melatonin levels (12,50±3,54 pg/ml) were found in the group with high disease activity. Also in our study we observed that there is no association between melatonin and C3, C4, Anti dsDNA levels. The present study showed significantly lower daily melatonin levels in women with SLE compared to healthy women. To the best of our knowledge, this is the first study comparing melatonin levels in healthy women and SLE patients from our region. Therefore, further studies are needed to confirm or reject our results.

**Keywords:** melatonin, systemic lupus erythematosus, anti dsDNA

## **Spontaneous Bowel Perforation Caused by Ventriculoperitoneal Shunt Catheter**

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### Abstract:

Ventriculoperitoneal (VP) shunt procedure is a well-established treatment for obstructive hydrocephalus providing drainage of cerebrospinal fluid via a subcutaneous catheter into the peritoneal cavity. Bowel perforation is an unusual complication of ventriculoperitoneal shunting. We presented here a case who had double perforation of ileum caused by a VP catheter. A 9-month-old female with VP shunt presented with abdominal distension and refusing food. She had signs of mechanical intestinal obstruction on physical examination. The leukocyte count was 16.500/ $\mu$ L(4100-11200/ $\mu$ L), with prevalence of neutrophils. C reactive protein was 3.09 mg/dL (0-0.800 mg/dL). Abdominal radiographs demonstrated multiple gasfluid levels with absence of motion of the coiled VP catheter on serial images. We decided to perform a laparotomy because of increased mechanical bowel obstruction signs such as abundant nasogastric drainage, abdominal distension and deterioration of general condition. At laparotomy, there were multiple adhesions among the bowel loops. The shunt had perforated the small bowel 40cm from the ileocecal valve. The catheter had again returned to the peritoneal space via a second bowel wall perforation. The shunt catheter was removed and perforations were repaired. The patient did not require a new VP placement. Approximately 119 bowel perforations have been documented worldwide. VP catheters remained in the bowel lumen and protruded from the anus or mouth in these reported cases. We presented here the first case of double perforation of the small bowel by the VP catheter. We think that previous abdominal operations may be responsible for this perforation in association with the decreased bowel mobility due to adhesions.

**Keywords:** hydrocephalus, ventriculoperitoneal shunt, bowel perforation

## **Altered MicroRNA Expression in the Postmortem Prefrontal Cortex Of The Alcohol Dependence**

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### **Abstract:**

We aimed to analyze the expression levels of miR-132, miR-133b, miR-140, miR-181a, miR-190 and miR-212 in the postmortem prefrontal cortex tissues of people who died with alcohol abuse. Total RNA was isolated from prefrontal cortex tissue samples taken from 30 alcohol and 30 non-alcohol users. The microRNA expression levels were determined by cDNA and quantitative real-time polymerase chain reaction. The 2- $\Delta\Delta$ CT method was used for the determining expression levels. SPSS 22 (IBM Corp., Armonk, NY, USA) was used for data analysis and  $p < 0.05$  was considered as statistically significant. We found increased expression levels of miR-133b, miR140, miR-181a and miR-212, while decreased expression levels of miR-132 and miR-190 in alcohol use. Studied microRNAs might be associated with neuronal pathways of alcohol dependence.

**Keywords:** microRNA, prefrontal cortex, postmortem, alcohol dependence, expression

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## **The relationship between Cultural Sensitivity and Sexual Myths Among University Students**

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### **Abstract**

We aimed to examine the relationship between cultural sensitivity and sexual myths among university students in this study. This cross-sectional study was conducted with 1081 university students in 2021-2022 academic years in Bartın, Turkey. Data collection tools were “Personel Characteristic Form”, “Sexual Myths Scale” and “Intercultural Sensitivity Scale”. To analyze sexual myths by participants’ characteristics, we utilized *t*-tests and ANOVA, and the Bonferroni test during post-hoc comparison. To identify the relationships among the variables, we utilized the Pearson’s correlation coefficient. Finally, to verify the mediating effects of participants’ cultural sensitivity in the studied relationship, we utilized a simple regression analysis and a multiple regression analysis. The average age of the students is 20.17 years; 58.4% female and 41.6% male; 4.2% were in the preparatory class, 34.2% in the 1st grade, 34.1% in the 2nd grade, 18.9% in the 3rd grade and 8.5% in the 4th grade. Male students believed in higher levels of sexual myths. Students living in metropolitan/metropolitan cities for a long time believed in sexual myths at a lower level than students living in towns/villages/towns, districts and cities. The students who did not think that being together with different cultures contributed positively to you believed in sexual myths at a higher level ( $t=-4.406$ ,  $p<0.001$ ). The students who found your level of knowledge about sexuality and sexual health sufficient believed in sexual myths at a higher level ( $t=2.493$ ,  $p=0.013$ ). The total mean score of the Cultural Sensitivity Scale was a significant predictor of students' sexual myths ( $R^2=0.114$ ,  $p<0.001$ ). 11% of the total variance regarding sexual myths refers to students' cultural sensitivity. A one-point increase in the Intercultural Sensitivity Scale causes a -0.382 decrease in the Sexual Myths Scale ( $\beta = -0.382$ ). It is recommended to plan and open lessons on sexual health and cultural sensitivity in the curriculum in universities.

**Keywords:** intercultural sensitivity, sexual myths, university students.

Oral Presentation

## Ovarian Carcinomatosis Microenvironments Induce Epithelial-Mesenchymal-Transition and Up-Regulate Protease-Procoagulant Activity in Mesothelial Cells

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### Abstract:

Our aim was to study the induction of epithelial mesenchymal transition (EMT) of mesothelial cells as well as the regulation of neprilysine and modification of peritoneal cell surface in carcinomatosis patients. Mesothelial cell was purchased from Zenbio. Different ovarian and digestive peritoneum samples from carcinomatosis and non-carcinomatosis patients obtained from division of digestive surgery and department of gynecology oncologic. Anatomico-pathological analysis and immunohistochemistry using anti CD10 (neprilysine), CD31 (blood vessel marker), D2-40 (lymphatic vessel marker) were performed routinely in the Lariboisière hospital laboratory. Scanning electron microscopy performed with a S260 CAMBRIDGE scanning electron equipped with a LaB6 filament apparatus. Neprilysine, epithelial mesenchymal transition (EMT) related molecules and stem cell markers (Slug, Snail, E-cadherin, Twist Vimentin,  $\alpha$ -SMA, Nanog, Nestin, Oct3/4, N-cadherin), growth factors such as FGF-2, TGF- $\beta$ , VEGF- $\alpha$  and VEGF-B quantified by q-PCR. Cell viability of mesothelial cells in the presence and absence of peritoneal fluids from carcinomatosis patients (grown in 25% of ovarian or digestive cancer ascites) analyzed by bioluminescence. Peritoneal fluid as well as mesothelial cell conditional medium (overnight secretion) assessed by cytokine array method (ray-Bioteck). Modified mesothelial cell layer and their microenvironments can favor fibrin deposition for cancer cell adhesion as proved by scanning and transmission electron microscopy. The mesothelial cells change their morphology after incubation of the cell with carcinomatosis peritoneal fluids *in vitro*. Epithelial mesenchymal transition (EMT) associated with upregulation of neprilysin, matrix metalloproteinase-2, tissues factor and the new cytokines secretions such as interleukin-6, and 8, hepatocyte growth factor and granulocyte chemotactic protein-2 mRNA analyzed by q-PCR and protein activity. In the same condition, endothelial protein C receptor expression as a natural anticoagulant was decreased. In parallel, carcinomatosis cell clusters extracted from peritoneal fluids were found to be associated with fibrin. Kinetic analysis of cancer cell-fibrin interaction *in vitro* studied by micro cinematography showed that fiber filaments generated from clots inhibited cancer cell adhesion on fibrin clots. Our results indicated that fibrin deposit on the peritoneal surface serve as a niche for cancer expansion in carcinomatosis patients.

Keywords: mesothelial cells, ovarian carcinomatosis, tumor microenvironment

## **Estimating Currents from Action Potentials Using Single and Multi-output Neural Network Models**

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### **Abstract:**

Ion channels are water-filled pores formed by membrane proteins abundant in excitable cells' plasma membranes. Ion channels are responsible for converting signals into biological responses. They are primarily engaged in the generation of short-term action potentials via the combined activity of particular ionic currents. The goal of this study is to provide a neural network model that was used to predict 13 ionic currents (such as sodium and calcium channels) from different action potential (AP) shapes. We use a single-cell model to perform electrophysiological simulations and obtain AP and 13 current shapes based on variations in the ion channel conductance in cardiomyocytes, which we then compare to experimental results. Constantly increasing and decreasing the conductance of each ion channel produces 880 different sets of AP shapes and current shapes, as well as one standard AP shape and 13 standard current shapes without causing any changes in the conductance of any other ion channel. Next, we calculate the AP difference shapes and feed them into our neural network along with the passage of time, in order to demonstrate how the dynamics of action potential induction, movement of the action potential, and the release of neurotransmitters affect the function of ion channel function. As a starting point for these calculations, the Hodgkin-Huxley model is utilized. In this study, we demonstrate that using only AP shapes and MATLAB's neural network tool, it is possible to predict changed ion channel currents with high prediction accuracy.

**Keywords:** neural networks, numerical modeling, membrane proteins, ionic currents, action potential

## **Personnel Working with Disabled Children in Special Education Institutions First Aid Information and Practices**

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### **Abstract**

Special education institutions maximize the abilities of children with disabilities and ensure their integration into society; carries out studies to develop basic self-care skills, independent living and professional skills. Disabled children spend most of the day in these institutions, and therefore they may be exposed to accidents in these institutions. For this reason, it is of great importance that the personnel are sufficient in terms of first aid applications in accidents that occur in the institution. This research was carried out as a descriptive study in order to determine the first aid knowledge level of personnel working with disabled children in special education institutions and the factors affecting their knowledge levels. This research was conducted with 145 personnel working in special education and rehabilitation centers affiliated to the Directorate of National Education in a province in the east of Turkey and volunteering to participate in the research. "Introductory Information Form" and "Basic First Aid Practices Questionnaire" were used to collect data. Descriptive statistics, Mann Whitney U and Kruskal Wallis tests were used in the analysis of the data. It was determined that the average age of the personnel participating in the research was  $29.41 \pm 7.08$  years, 66.2% were women and 84.1% were undergraduate graduates. It was found that the tenure of the personnel in the institution was  $4.19 \pm 3.85$  years and 66.2% of them worked as teachers. It was determined that 85.5% of the personnel working in the institutions received first aid training, and 53.1% of the trainees received this training from the school they graduated from. It was stated that 49.0% of the participants rarely encountered events that required first aid in the institution; It was determined that 62.1% of them evaluated their first aid knowledge as moderate and the Basic First Aid Practices Questionnaire average score was  $14.22 \pm 2.66$ . It has been found that the most common types of accidents encountered by personnel working with disabled children in special education institutions are falling-hit and fainting-seizure. In the study, it was determined that the average score of the Basic First Aid Practices Questionnaire of the personnel working in the institution was high. It was determined that the average score of the personnel who received training and evaluated the first aid education level as good, was higher and the difference between the groups was statistically significant. In line with these results, it is thought that a child's life can be saved or lifelong disabilities can be prevented by applying regular, up-to-date and qualified training programs to the personnel working in private education institutions.

**Key words:** disabled child, special education institution, first aid.

## Whole-Exome Sequencing Results in Follow-Up Patients with Nephropathy: A Two-Center Retrospective Study

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### Abstract:

Nephropathy is the deterioration of kidney function, and the final stage of nephropathy is called kidney failure or end-stage renal disease (ESRD). According to the CDC, diabetes is the most common cause of ESRD. In 2011, it was reported that approximately 26 million people in the USA had diabetes and more than 200,000 people with ESRD due to diabetes were either under chronic kidney dialysis or had a kidney transplant. Both type-1 and type-2 diabetes can lead to diabetic nephropathy, but type-1 is more likely to lead to ESRD. There are five stages of diabetic nephropathy and the fifth stage is ESRD. Progress from one stage to the next may take many years. The molecular pathophysiology of nephropathy is still unclear and there is no specific treatment. However, susceptibility to nephropathy in humans is mostly governed by genetic-based factors. It is vital to examine hereditary risk factors, especially in cases of nephropathy in those who have not had diabetes. Our study included 52 patients (25 females, 27 males) who were referred to the medical genetic polyclinics of Basaksehir Cam and Sakura City Hospital and Istanbul Haseki Training and Research Hospital, and followed-up for kidney diseases ranging from 0 to 60 years of age. The patients had not been diagnosed with diabetes. Whole-Exome Sequencing (WES) was performed on the DNBSEQ-G400 (MGI Tech., China) Next-Generation Sequencing platform using DNA samples isolated from the peripheral blood of the patients. WES results were analyzed retrospectively. Within the scope of the study, 101 genes associated with nephropathy and 400 genes associated with diabetes were examined, and genetic variations of clinical importance were detected in 24 of 50 patients. In this context, the diagnostic value was calculated as 44.4%. It was determined that 7 of the detected variations were *PKD1*, 5 of them were *COL4A3*, 2 of them were *COL4A5*, and 1 each in *CD2AP*, *COL4A4*, *COQ8B*, *DAAM2*, *FN1*, *LMX1B*, *MEFV*, *PKD2*, *PLCE1*, and *SLC34A1* genes. While only 3 of the patients with variation were homozygous inherited and *de novo* variation was observed in 20 patients. Interestingly, compound heterozygous inheritance was detected in the *MEFV* gene of 1 patient. According to the result of our study, it may recommend to screening the *PKD1* gene and genes associated with Alport Syndrome in genetic analyzes of nephropathies. Larger studies are needed.

Keywords: Nephropathy, ESRD, Diabetes, WES, Sequencing

*Oral Presentation*

## **A Moroccan Family with Distal Hereditary Motor Neuropathy and a c.452C >T Variant in the Small Heat Shock Protein HSPB1**

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### **Abstract:**

The distal hereditary motor neuropathies (dHMN) also known as spinal form of Charcot–Marie–Tooth disease (CMT) is a group of clinically and genetically heterogeneous inherited neuromuscular disorders characterized by the degeneration of alpha motor neurons in the peripheral nervous system leading to slowly progressive distal symmetric limb muscle weakness and atrophy. At present, about thirty known genes or loci have been reported to be associated with dHMN with variants in *HSPB1* being the most common cause. Our objective is to identify the genetic cause of dHMN in a Moroccan family with 3 patients. The clinical and electrophysiological investigation of the proband showed the first muscular signs at the age of 34 years starting with a progressive muscle weakness and atrophy in the two lower limbs leading to an axonal bilateral and symmetrical motor neuropathy in lower limbs with absence of overt sensory abnormalities. Whole exome sequencing on the proband was carried out in 3 billion (Seoul, Republic of Korea) with Novaseq 6000 (Illumina, San Diego, CA, USA). It revealed a pathogenic heterozygous missense variant c.452C>T (p.Thr151Ile) in the *HSPB1* gene. We confirmed the variant in all 3 patients of the family with sanger sequencing as it showed the presence of the variant in 2 generations in a heterogenous state. This study identifies a heterozygous mutation in *HSPB1* as a cause of the dominant form of distal hereditary motor neuropathy (dHMN).

**Keywords:** Charcot-Marie-Tooth; dHMN; WES, Moroccan family, *HSPB1*

## **New Heparin Mimetic Material And Its Anticancer Activity**

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### **Abstract:**

In recent decades, heparin and heparin sulfate derivatives and analogs have been synthesized from natural sources or through chemical synthesis. Sulfated glycosaminoglycans (GAGs) are glycosaminoglycans that have been sulfated (GAGs). They are known as heparin sulfate mimics, and they play an important role in the body. Some recent advancements in cancer therapy have played a role. GAGs are natural heteropolysaccharides, as previously stated. They are found in all mammalian tissues. They are composed of repeated patterns. Disaccharide units are made up of sulfated or nonsulfated monosaccharide units. The size of their molecules and the type of sulfation present vary. They can be found on the tissue as free molecules or as part of the proteoglycan. In the current study we synthesize a new heparin mimetic materials and its anticancer activity was investigated on MCF-7 cell line. In the current study we synthesize a new heparin mimetic materials and its anticancer activity was investigated on MCF-7 cell line. While sulfating chitosan, the following method was applied briefly with the aim of random sulfation; 1 gr. The chitosan oligomer is reacted with 50 mL of dimethyl sulfoxide (DMSO) in the reactor flask. Thereupon, the pyridine trisulfoxide complex is added. The reaction is continued for 3 hours at room temperature with stirring. It is cooled and precipitated with 50% NaOH. The product is dialyzed against distilled water for 48 hours. The dialyzed sample is lyophilized at – 60°C. The obtained material was used for cell viability assay. For this purpose XTT analysis was used. In the current work heparin mimetic material was synthesized by chitosan sulfonation. The result of cell viability test show that this new material has cytotoxic effect on MCF-7 cell line.

**Keywords:** heparin, heparin mimetics, anticancer.

## **An In Vitro Investigation of the Interaction of Genomic DNA with Copper Chloride**

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### **Abstract:**

Some metal ions are essential in the maintenance of DNA stability and structure, but some are also known to be mutagenic and carcinogenic. Relevant facts about the mutagenicity and carcinogenicity of metal ions were obtained from several research studies conducted on the interactions between d-block elements and DNA. Copper (Cu) complexes have the aptitude for interacting with DNA due to their three-dimensional structure, cationic ability, the tendency of hydrolyzing DNA, and their redox ability. In order to produce more effective and safer therapeutic agents, there is the need to exploit the interaction of DNA with metal complexes. Despite that, DNA-metal complexes interaction has not been fully elucidated. Thus, studies investigating the interaction of DNA with CuCl<sub>2</sub> is extremely limited. Hence, this study aimed to provide data on that. UV-absorbance spectrophotometry was adopted in investigating the interaction of the ct-DNA with CuCl<sub>2</sub>. Combinations of ct-DNA with prepared concentrations of CuCl<sub>2</sub> (1000 μM, 500 μM, 250 μM, 125 μM, and 62.5 μM) were made in sterile water. Following that, their absorbance intensities were measured. Also, the absorbance intensity of only DNA (positive control) and only CuCl<sub>2</sub> (negative control) was measured. All measurements were done using MultiskanGO UV-absorbance spectrophotometer and prior to the measurements, it was calibrated with nuclease-free water. The data obtained from this study indicate that CuCl<sub>2</sub> incited an increment in ct-DNA absorption intensity (hyperchromism), hence, bind to the DNA via groove binding. In conclusion, CuCl<sub>2</sub> has the aptitude for interacting with DNA and can bind to DNA via groove binding. Thus, it could be used in the development of therapeutic agents such as anticancer agents, as the increment in the absorption intensity of the ct-DNA could be due to a degradation of the ct-DNA incited by the CuCl<sub>2</sub>. However, further studies on the interaction of DNA with copper compounds (CuCl<sub>2</sub>) and the possible DNA cleavage activity of copper compounds would provide further data.

**Keywords:** ct-DNA, CuCl<sub>2</sub>, DNA-Interaction, Metal Complexes, UV-vis Spectrophotometry

<sup>#</sup>The present paper is produced from a portion of the masters' thesis of the first author under the supervision of the second author.

## **Investigation of Kinesiophobia and Anxiety Levels in Geriatric Patients With Shoulder Injury**

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### **Abstract:**

The aim of this study was to investigate the relationship between anxiety levels and kinesiophobia and to determine the relationship between all of them in geriatric patients with shoulder injury. A total of 24 individuals with a mean age of  $70,33 \pm 3,39$  years were included in the study. Tampa Scale for Kinesiophobia (TKÖ) were used to kinesiophobia also Application of State-Trait Anxiety Scale (STAI I-II) were used for anxiety. Tampa Kinesiophobia Scale scores and State and Trait Anxiety Scale scores showed significant differences between groups with and without soft tissue injury, according to the Independent Variable T Test evaluation ( $p < 0,05$ ). There was a significant difference between the groups with and without soft tissue injury interms of functional situation, cognitive function, anxiety, and kinesiophobia. However, there was not a significant between the groups with and without soft tissue injury proprioception and physical activity. It was concluded that soft tissue injuries were more common, especially in elderly women. According to our results, it is not only aimed at shoulder functions during the treatment process in geriatric patients but also recommended to establish a treatment process by considering anxiety and kinesiophobia.

**Keywords:** anxiety, kinesiophobia, proprioception, soft tissue

Oral Presentation

## Determination of Antibacterial Activity of Boron Compounds Against The Caused of Hospital Infection *Pseudomonas aeruginosa* ATCC 27853

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### Abstract:

In this study, it was aimed to determine the antibacterial activity of boron compounds on *Pseudomonas aeruginosa* ATCC 27853 strain, which is a nosocomial infection agent. Boron compounds were dissolved with double distilled water and the final concentration was determined as 500 µg/ml. 24-hour fresh culture was prepared by passage of *Pseudomonas aeruginosa* ATCC 27853 Eosin Methylene Blue and blood agar. Bacterial suspension was prepared from the colonies taken from the prepared cultures in saline with a turbidity of 0.5 Mc Farland  $5 \times 10^5$  cfu/ml. Then, 100 µl of Tryptic Soy Broth medium was added to all wells of the 96-well microplate. From the 1st to the 10th well, 100 µl of the relevant boron compounds were added and diluted until the 10th well. The prepared bacterial suspension was added to all wells. Bacteria control was added to the 11th well, only the bacterial suspension, and only boron compounds were added to the 12th well. It was incubated for 24 hours at 37°C. Wells showing inhibition were noted. Etidote, Sodium Metaborate Tetrahydrate, Sodium Tetrafluoro Borate, Potassium Metaborate, Sodium tetraborate, Potassium Tetrafluor Borate and Ulexite did not show any antibacterial activity on *Pseudomonas aeruginosa* ATCC 2783 strain, while Sodium Perborate Monohydrate 62.5 µg/ml, Ammonium Borate Monohydrate 62.5 µg/ml, Ammonium Borate Fluoric acid 31 µg/ml, Borate Borate, Calcium Metaborate 15.6 µg/ml, Colamite, Ammonium Pentaborate Tetrahydrate, Zinc Borate and Borax 7.81 µg/ml showed antibacterial activity. Colamite, Ammonium Pentaborate Tetrahydrate, Zinc Borate and Borax showed the most effective antibacterial activity on *Pseudomonas aeruginosa* ATCC 278553 strain. However, the antibacterial activity efficacy at higher doses should be tested and non-toxic dose ranges should be determined by in vivo studies.

Keywords: Antibacterial Activity, Boron Compounds, Minimal Inhibition Concentration, *Pseudomonas aeruginosa*

# The study was not financially supported.

## **Is this by chance or an Iceberg? A Case Report of Gastroschisis from Kayseri**

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### **Abstract**

Gastroschisis is a rare congenital malformation characterized by herniation of abdominal organs into the amniotic cavity through a defect in the fetal anterior abdominal wall. Globally, its prevalence is increasing. However, the exact magnitude and associated factors were unknown in Turkey. On the other hand, just in a single week (December 2021), two neonates were born with gastroschisis in a university hospital in the Central Anatolian region. Therefore, this caught our attention to investigate the possible risk factors based on one of the cases presented. A boy with gastroschisis was born via cesarean section due to premature rupture of the amniotic membrane at 32 weeks of gestation (1600 gram) on 26/12/2021. The mother is 20 years, gravida 1, has no consanguineous marriage, chronic diseases, pre-eclampsia, or genetic diseases in the families. She has given two doses of betamethasone three days before the operation. The neonate was born healthy and no abnormal findings were detected except the protrusion of intestinal organs (gastroschisis) and meconium staining. He was admitted to the Neonatal Intensive Care Unit (NICU) and the surgical team placed the exposed intestine into a silo, sutured, and suspended it above the infant to allow the intestine to slowly reduce over time. Around silo, cream with silver sulfadiazine and lidocaine was applied three times per day (TID). The baby was on radiant warmer and received 170cc of 10% dextrose, vancomycin 16 milligrams (mg) Intravenous (IV) twice a day (BID), carbapenem antibiotics (Meronem) 32 mg IV TID, Fentanyl 80 mg, 12 cc serum, Penbicin 85 mg IV BID, Taksidem 85 mg Intramuscular (IM) BID, Vitamin K 1 mg (single dose) IM and Vitamin D 3 drops (PO). All fluid intake and output, vital signs, blood chemistry, blood gases, electrolytes, and acid-base balance were closely monitored with charts. Young maternal age, environmental exposure to smoking, and wildfire were listed as possible risk factors. Therefore, programs that reduce maternal exposure to smoking should be encouraged. We recommend also studies with a strong design.

**Keywords:** Gastroschisis, congenital anomaly, abdominal malformation, a risk factor

## **Obesity, Prevalence of Hypertension and Metabolic Syndrome in a Women Sample from Khouribga (Morocco)**

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### **Abstract:**

According The WHO, obesity is as an excessive accumulation of fat in the body. It is currently considered a major public health problem. To evaluate the rates of general and abdominal obesity and to analyze the effect of obesity on the prevalence of hypertension and the metabolic syndrome in a sample of Moroccan women from the province of Khouribga (Morocco). This is a cross-sectional survey carried out in the province of Khouribga (Morocco). It was conducted in 2019 among 117 randomly sampled women aged 18 to 65. Anthropometric measurements and blood pressures increase with age. The prevalence of general obesity (BMI>30 kg/m<sup>2</sup>) is 47.87%. This rate is higher than other Moroccan national studies. However, it is comparable to that of Sahrawi Moroccan women (49%). The percentage of central obesity (TT >0.88) is 79.40%, it is comparable to that of the southern provinces of Morocco (76%) and the region of Marrakech (75.4%). The prevalence of hypertension is 54.70%. In hypertensive women the rates of hypertriglyceridemia and hyperglycemia are respectively 32.20% and 25% higher than in normotensives. The prevalence of the metabolic syndrome is 35.71%, it is comparable in other Moroccan populations but also lower than other national studies. The most common risk factor is hypertension with 88% followed by hyperglycemia and hypertriglyceridemia with the same percentage (64%). The prevalence of abdominal obesity is high and comparable to that of the Sahrawi Moroccan women with high prevalence of hypertension and metabolic syndrome. These are risk factors for developing cardiovascular, renal, metabolic diseases.

**Keywords:** obesity, hypertension, metabolic syndrome, Women, khouribga, Morocco

*Oral Presentation*

## **Study on Malaria Prevalence on General Population of Damaturu, Yobe State, Nigeria**

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Abstract:

The study was conducted to investigate the prevalence of malaria on the general population of Damaturu, Yobe State, Nigeria. In this study a total of 178 participants were taken for the malaria. Sociodemographic information such as age and monthly income were collected by using questionnaire. Data were analysed with SPSS to find association of malaria with tested variables and P-value of less than 0.05 was considered as statistically significant. Out of 178 participants, 80 Males and 98 females are examined for malaria and 11(100%) out of 11 in 1-10 age group, 09 (69.2%) out of 13 in 11-20 age group, 08 (72.72%) out of 11 in 21-30 age group, 05 (29.41%) 17 in 31-40 age group, 07 (33.33%) out of 21 in 41-50 age group and 02 (28.57%) out of 07 in more than equal to 51 age group males are malaria positive. While 06 (100%) out of 06 in 1-10 age group, 08 (47.05%) out of 17 in 11-20 age group, 10 (27.02%) out of 37 in 21-30 age group, 09 (34.61%) out of 26 in 31-40 age group, 05 (45.45%) out of 11 females were malaria positive.

Key words: malaria, prevalence, disease

*Oral Presentation*

## **Study of the correlation between the m.A10398G polymorphism, the A3243G mutation of the mitochondrial DNA and type 2 diabetes in a Moroccan population**

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### **Abstract:**

Type 2 diabetes (T2D) is a multifactorial disease, characterised by reduced insulin secretion and insulin resistance. The etiology of this disease has a strong genetic component and could be due to abnormalities related to mitochondrial DNA and/or nuclear DNA. In Morocco, no work has studied the impact of the pathogenic m.A3243G mutation and the m.A10398G polymorphism of mitochondrial DNA on the prevalence of T2D. In this context, we were interested in studying the involvement of the mtDNA in the pathogenesis of diabetes in a Moroccan population. The study included 79 diabetics and 43 healthy controls. DNA was extracted from blood. After PCR amplification, the DNA was sequenced and analysed. The sequences were aligned to the Human Mitochondrial DNA Reference Sequence NC\_012920.1, using the NCBI Nucleotide BLAST tool. Our results showed an absence of the m.A3243G mutation in the entire study population, including 3 deaf diabetic subjects. While for the m.A10398G polymorphism, a significant association of the m.A10398G mtDNA variant with diabetes ( $p=0.002$ ; Odds ratio (OR) =0.916, 95% CI =0.430-1.953) was observed, of which A allele frequencies were significantly higher in diabetics (60.3%) compared to controls (57.7%). Our study highlights, for the first time in Morocco, an association between type 2 diabetes and the m.A10398G polymorphism, hence the need for large-scale studies to fully understand the etiology of diabetes in the Moroccan population. The role of other genetic and/or environmental factors remains to be elucidated.

**Keywords:** Type 2 diabetes, mitochondrial DNA, m.A3243G; m.A10398G; Moroccan population

## **In Silico Screening And Exploration Into Phenotypic Alterations Of Deleterious Nonsynonymous Single Nucleotide Polymorphisms In CYP11A1 Gene**

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Abstract:

The aim of this study was to identify the most pathogenic polymorphisms of the CYP11A1 gene and to determine their impact on the structure and function of the P450<sub>scc</sub> protein. High-risk nonsynonymous single nucleotide polymorphisms (nsSNPs) in the CYP11A1 gene were predicted using 14 bioinformatic tools. Conservation analysis was performed by the CONSURF web server. Analysis of the impact of pathogenic SNPs on CYP11A1 protein structure was performed using Discovery Studio software and DUET web server, and molecular docking was performed using AutoDock vina software. Out of 389 nsSNPs, we identified 6 (G138R, R218C, G220V, Q349K, P437S and R460Q) as deleterious using *in-silico* prediction tools. The results of conservation analysis revealed that all these nsSNPs were located in conserved regions. Docking results, revealed a decrease in affinity of the CYP11A1 Cholesterol complex in all variants. Comparison of hydrogen and hydrophobic interactions in the structure of wild type CYP11A1 and its mutant forms showed that most of these nsSNPs affect the structure of the protein at different levels. The DUET web server revealed that all nsSNPs affect the stability of the protein. This study provides useful information about high-risk nsSNPs that may affect the structure and function of the CYP11A1 protein.

Keywords: *cyp11a1*, steroidogenesis, *p450scc*, *nssnps*, *in silico*.

## Genetic Cause Determination of some Syndromic Deafness by Whole Exome Sequencing in Moroccan Families

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### Abstract:

Deafness is the most common sensory deficit. Its repercussions on language acquisition, school and social integration are well known. This monogenic affection is of great phenotypic, etiological and genotypic heterogeneity. More than 70% of hearing loss is of genetic origin. Two-thirds are non-syndromic while one-third is syndromic. Until now the cause of certain hereditary deafness is still unknown and many genes are to be discovered. In this work, our interest focused on two forms of syndromic deafness, Usher syndrome type 2C (*GPR98*) and Zellweger spectrum disorders (*PEX1*). This study aims to establish the appropriate molecular diagnosis in two consanguineous Moroccan families. The Whole Exome Sequencing (WES) was performed on a HiSeq 2000 (Illumina) sequencer to determine the disease-causing gene. Bioinformatics analysis was performed to predict the score of change damaging using many prediction programs. The structural and functional impacts of the amino acid substitution were predicted by molecular modeling. We have identified, in the first family, two novel mutations at compound heterozygote state (c.1054C>A / p.Pro352Thr and c.16544delT / p.Leu5515\*) in the *GPR98* gene in their affected siblings with moderate hearing loss, normal vestibular function and before installing visual disturbances. For the second family, a new pathogenic homozygous *PEX1* mutation (c.3077T>C, p.Leu1026Pro) was identified in two Moroccan children with profound deafness, impairment vision and development delay. Prediction by bioinformatics tools revealed that the structural impact of the substitution of the Proline residue by Threonine at position 352 in *GPR98* protein is likely to disrupt the hydrophobic interactions between these two amino acids, thus destabilizing the protein. Similarly, for the *PEX1* protein, the change from Leucine to Proline at position 1026, probably leads to an alteration of the ATP hydrolysis function. This is the first time that mutations in the *GPR98* gene are described in Moroccan family. Furthermore, it was only after these two mutations identification in the *GPR98* and *PEX1* genes that the correct diagnosis could finally be established for these two families.

Keywords: deafness, *grp98*, *pex1*, usher syndrome, zellweger disorders.

This work was supported by Pasteur Institute of Morocco (IPM) and a collaborative project between the French National Institute of Health and Medical Research (INSERM) and the Moroccan National Centre for Scientific and Technical Research (CNRST).

## **Combination of terpenoids promote apoptosis and cell cycle arrest in A549 non-small cell lung cancer cells #**

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### **Abstract:**

Lung cancer is one of the most common cancers in the world. Several anticancer drugs were developed and tested to treat lung cancer, but they all failed due to drug resistance. Combined treatment improved drug efficacy while decreasing toxicity and tumor resistance to treatment, even at low drug dosages. Terpenoids are effective anticancer phytochemicals that have been shown in various human cancer cell lines. At a Combination Index of 0.75, the combination of Terpenoid I (3.75 g/ml) and Terpenoid II (12.5 g/ml) showed an increased anti-proliferation effect in A549 cells. At 24 hours, the synergistic terpenoids induced LDH leakage, severe morphological damage, and early and late apoptotic activation in A549 cells. Furthermore, it promotes the intrinsic mode of apoptosis through mitochondrial membrane depolarization and upregulation of Bax, as well as downregulation of Bcl-2. A significant increase in ROS indicates that the combination has an oxidative stress-dependent action. The combination of terpenoids causes G0/G1 phase arrest and induced cell senescence, as evidenced by flow cytometry analysis and increased SA- $\beta$ -gal activity, respectively. The combination induces anti-migration potential in A549 was also demonstrated using a wound-healing assay. Furthermore, the tested combination was revealed to be non-toxic to human RBC cells and PBMC cells. Terpenoids, when combined, offer nature-derived potent candidates capable of treating NSCLC.

**Keywords:** lung cancer, apoptosis, terpenoids, natural product

## Chemical Investigation and Antimicrobial Activity of Some *Hyoscyamus* Species from Azerbaijan

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### Abstract:

*Hyoscyamus niger* and *H. reticulatus* (*Solanaceae* family) naturally grow in the different regions of Azerbaijan. In the medicine major alkaloids of plants - hyoscyamine, atropine and scopolamine are used as mydriatics, antispasmodics, anti-asthmatic, analgesic, etc. Plants were used in the traditional medicine as a sedative and analgesic, also had been used in mental disorders, epileptic mania, and chronic dementia with insomnia, paralysis, agitans, convulsions, neuralgia, spasmodic cough, asthma, etc. The aim of study is to investigate alkaloids, phenolics, tyramine derivatives and phytosterols of plants. Antimicrobial activity of ethanolic extracts and ethylacetate phase of leaves, saponin rich butanolic phase of seeds were tested against *Staphylococcus aureus*, *Bacillus cereus*, *Salmonella enterica subsp. enterica*, *Listeria monocytogenes*, *Esherichia coli* and *Candida albicans*. All strains were obtained from American Type Culture Collection (ATCC). Alkaloids were determined in the methanol and alkaloid rich extracts of different plant organs by performing GC-MS and LC-MS methods. Phenolics and tyramine derivatives were analyzed in the methanol extract by using LC-MS method. Phytosterols were qualitatively determined in the seed oils of plants by using GC-FID method. Saponification was applied and sterols determined in the unsaponified part of sample. Approximately 30 alkaloids, tropane and pyrrolidine derivatives were identified in the extracts of both species. Atropine, scopolamine, apoatropine, 3-phenylacetoxy-6,7-epoxy tropane, 3 $\beta$  -phenylacetoxytropane, 3 $\alpha$ -tropine and 3 $\beta$ -tropine were the major components of plants. *N-trans* and *cis-feruloyl tyramines* were identified in the aerial parts of both species. Caffeoylquinic acid, rutin and kaempferol-3-*O*-glucoside-7-rhamnoside were identified in the aerial parts of plants. Precense of campesterol, stigmasterol,  $\beta$ -sitosterol, cholesterol were observed in both species. Extracts demonstraded moderate or notable antimicrobial activity on strains, most significant activity was observed against *S. aureus* and *B. cereus*. The results of the study provide information on the alkaloid, sterol, tyramine derivatives, phenolic compounds and antimicrobial activity of plants from Azerbaijan.

Keywords: *hyoscyamus* species, alkaloids, tyramine derivatives, phenolics, phytosterols, antimicrobial activity.

*Oral Presentation*

## **Genetic Heterogeneity In *GJB2*, *COL4A3*, *ATP6V1B1* And *EDNRB* Variants Detected Among Hearing Impaired Families In Morocco**

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### **Abstract:**

Deafness is the most prevalent human sensorineural defect. It may occur as a result of external auditory canal involvement or a deficiency in the sound conduction mechanism or impairment of the cochlea, the cochlear nerve or central auditory perception. The genetic causes are the most common, as approximately 70% of hearing disorders are of hereditary origin. A third of hereditary deafness is syndromic (associated with other symptoms) and the two thirds are non-syndromic (isolated deafness). At this date, 173 loci of deafness gene have been reported in the literature (69 DFNA, 94 DFNB, 6 X-linked DFN, 2 DFNM, 1 DFNY and 1 AUNA1). For syndromic deafness, approximately 400 syndromes associated with hearing disorders are already described. Thus, the determination of causal mutations is a valuable aid for accurate and early diagnosis. This makes it possible to better guide the management since forms of deafness respond better to the cochlear implant than others. The correct diagnosis also gives an idea of the evolutionary profile of deafness. A whole exome sequencing was performed to identify the genetic cause of hearing loss in six Moroccan families and Sanger sequencing was used to validate mutations in these genes. The results of four out of the six families revealed four genetic variants in the genes *GJB2*, *COL4A3*, *ATP6V1B1* and *EDNRB* responsible for non-syndromic and syndromic hearing loss. Multiple Bioinformatics programs and molecular modelling predicted the pathogenic effect of these mutations. We identified in Moroccan deaf patients four homozygous mutations. These results show the importance of whole exome sequencing to identify pathogenic mutations in heterogeneous disorders with multiple genes responsible.

**Keywords:** Whole Exome Sequencing, Mutation, Hearing Loss, Moroccan patients

## **Computational analysis of the potential impact of mtc snps associated with male infertility**

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### **Abstract:**

Meiotic chromosomes endure rapid prophase movements that ease the formation of inter-homologue recombination intermediates that drive synapsis, crossing over and segregation process. To generate these fast moves, the meiotic telomere complex (MTC) enables telomere-inner nuclear membrane attachment during meiotic prophase I and transfers cytoskeletal signals via another complex: the LINC complex. Furthermore, disruption or mutations of any of the MTC genes (TERB1, TERB2 and MAJIN) alters telomere association with the nuclear envelope leading to impairment of homologous pairing and synapsis, a meiotic arrest, and consequently to male infertility. To decipher the effect of TERB1, TERB2 and MAJIN missense mutations on protein structure, stability, and function, different bioinformatic tools were used in this study including VEP, Mutabind2, Haddock, Prodigy, Ligplot, ConSurf, DUET and MusiteDeep. In total, thirty-two mutations were predicted to be deleterious using VEP web server: seventeen for TERB1, twelve for TERB2, and three for MAJIN. All these single nucleotide polymorphisms were further analyzed and only 13 SNPs (W8R, G25R, P649A, I624T, C618R, F607V, S604G, C592Y, C592R, R53C, R53H, H17P and G187W) were found to be the most damaging by at least six software tools and exert deleterious effect on the TERB1, TERB2 and MAJIN proteins structures and likely functions. They revealed high conservation, less stability, and having a role in post-translational modifications. This in silico-approach provides information to gain further insights about variants that might affect stability, change binding affinity and edit protein-protein interactions to facilitate their identification and functional characterization associated with male infertility.

**Keywords:** Snp; Mtc; In silico-approach; Male infertility.

## **Analysis of demographic characteristics and risk factors of breast cancer in Southern Punjab, Pakistan**

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### **Abstract:**

Breast cancer is a second major cause of female death worldwide. This study aimed to explore epidemiology, clinical profiles and contribution of reproductive and non-reproductive risk factors in breast cancer development among females from South Punjab, Pakistan. Data was collected through hospitals between October 2017 and March 2018 and study got approval by Bioethical Committee of Quaid-i-Azam University in September, 2017. A total of 163 cases and 163 age-matched controls were recruited through non-probability consecutive sampling method. All histologically confirmed patients irrespective of age, family history, clinical presentation and histopathological type were included in the study as cases. Patients, who were not willing to participate, were excluded from the study. Details regarding socio-demographic characteristics, family history of cancer, reproductive health and lifestyle factors were recorded using a structured questionnaire. Conditional logistic regression was performed to calculate odds ratios at 95% confidence intervals for breast cancer by menstrual and reproductive factors after adjustment of potential confounders. Conditional logistic regression was also applied for various demographic and medical risk factors/exposures. We found positive family history and hypertension significantly linked to an increased breast cancer risk (adjusted O.R >1.5, 95% CI, P<0.05) whereas, intense physical activity, increased anthropometric measurements and breastfeeding per child in months were inversely associated with breast cancer risk (adjusted O.R <1.0, 95% CI, P<0.05) in our study cohort. Our study reaffirms contribution of established risk factors for breast cancer, highlights protective factors and necessitates awareness/screening programs to reduce breast cancer burden in upcoming generations.

**Keywords:** Breast cancer, risk factors, South Punjab, family history, hypertension.

## **Neurological Manifestations In Pakistani Lysosomal Storage Disorders Patients And Molecular Characterization Of Gaucher Disease**

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### **Abstract:**

Lysosomal storage disorders (LSDs) are a large group of inborn errors of metabolism each caused by genetic mutations of a lysosomal protein encoding gene. Neurological complications in LSD cases range from severe neurodegenerations in 70% cases to mild symptoms or absence of neuropathy in others. Present study aimed to access the demographic and clinical profiles of forty-five LSD affected families enrolled during January 2018 to December 2019 to find out neurological symptoms in Pakistani LSD. This study was conducted by taking blood samples from patients, clinical profiles, pedigree details. DNA extraction and PCR amplification and then Sanger sequencing. Neurological manifestations were present in twenty-eight families including eleven Mucopolysaccharidosis-1 (MPS-I), four Gaucher's disease (GD) and all MPS-II, MPS-III, Niemann-Pick, Griscelli and Chediak-Higashi syndromes cases. Neurological involvement was not recorded in eight MPS-I, one Gaucher Disease, all MPS-IV and Pycnodysostosis affected families. Screening of *GBA* gene in Gaucher Disease families revealed a reported missense mutation p.L483P in all analyzed families. Clinical heterogeneity of MPS-1 and Gaucher Disease is evident from literature. Identification of same mutation in Gaucher Disease patients with or without neuronal involvement may be related to some unknown differences in the expression of genetic modifiers or exposure to environmental triggers.

**Keywords:** Lysosomal Storage Disorders, Gaucher Disease, Neurological manifestation, *GBA* gene, Pakistan.

*Oral Presentation*

## **Synthetically Lethal Nanoparticles For The Treatment Of Colorectal Cancer By Targeting Cancer Cell Specific Vulnerability**

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### **Abstract:**

Targeted cancer therapy using synthetic lethality approach is a promising strategy for specifically killing cancer cells by exploiting somatic mutations in cancer cells. Targeting colorectal cancer (CRCs) cells using LCS-1 (SOD1 inhibitor) by exploiting the reported synthetic lethal interaction between SOD1 and BLM. LCS-1 drug show very low water solubility due to hydrophobic in nature. The study aimed to develop a nanocarrier for LCS-1 delivery. We have synthesized and characterized magnetic nanoparticles (MNPs) which contains iron oxide core. MNPs were further grafted with three different polymers such as aminocellulose, dendron and polyethylene glycol (PEG). VSM analysis exhibited that nanoparticles after layers of polymers still retains the superparamagnetic behavior. MTT assay exhibited minimal cytotoxic effects on normal cells which is mainly attributed due to grafted AC. Dendron layer due to branching having pockets for LCS-1 encapsulation while PEG prevents nanoparticles (NPs) aggregation and imparts hydrophilicity. Nanocarrier encapsulated with LCS-1 drug exhibited around 104 times more selective towards BLM-deficient as compared to BLM-proficient HCT116 cells. LCS-1 loaded nanocarrier induced persistent DNA damage as demonstrated by DNA double strand break markers ( $\gamma$ H2AX and 53BP1) and ultimately apoptotic cell death preferentially in BLM-deficient HCT116 cells. Customized polymeric-iron oxide based nanocarrier for the effective delivery of LCS-1 were synthesized and characterized for selective targeting of CRC cells. Blank NPs were found to be cytocompatible and LCS-1-encapsulated NPs exhibited superior therapeutic efficacy as compared to free LCS-1 drug against BLM-defective colorectal cancer cells.

**Keywords:** colorectal cancer, genetic defect, synthetic lethality, triple-polymer-coated magnetic nanoparticles

<sup>#</sup>This study is supported by DST-Nanomission SR/NM/NB-1044/2016(G) and DST-SERB Grant No. YSS/2015/001851

## **Is it A Part of Tectorial Membrane?**

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### **Abstract:**

The craniocervical junction is the main structure that is related to the stability of the cervical region. The most important and principal formations of the junction are atlanto-occipital and atlanto-axial joints. In terms of atlanto-axial joint, there are many different ligaments that serve as a protector for the joint. Whereas some of them (transverse ligament of atlas, alar ligaments, apical ligament of dens, superior longitudinal band, and inferior longitudinal band of cruciform ligament) seem more important, a few of them (Arnold's ligament, Gerber's ligament) may be overlooked. Arnold's ligament is known as accessory atlantoaxial ligaments which can seem deep parts of the tectorial membrane. In this case, during the routine dissection on a caucasian male cadaver, after removing the bodies of the vertebrae, spinal cord, and tectorial membrane, we found an abnormal ligament. According to its position, it seems like Arnold's ligament but in terms of its coursing, it didn't like a part of the ligaments. Although many anatomists overlooked or ignored the ligaments, for surgeons, They are really important for some functions and the prognosis of the surgeries. This ligament which we found in that area may be a deep part of the tectorial membrane. So there are still unclear pieces of knowledge about the craniocervical junction.

**Keywords:** Craniocervical junction, tectorial membrane, accessory atlantoaxial ligaments, atlantaxial joints

## **Investigation of the Effect of Balance and Posture on Speech Function in Stroke Patients**

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### **Abstract**

The aim of this study was to investigate the relationship between speech-language functions and posture, balance in stroke patients. Six stroke patients diagnosed having a speech disorder and without cognitive impairment (Mini Mental Test score  $\geq 24$ ) were included in the study. Balance and postures of stroke individuals were evaluated using Berg Balance Test (BBT) and Postural Assessment Scale for Stroke Patients (PASS-T). The Stroke and Aphasia Quality of Life-39 Test (SAQOL-39) was used to evaluate how speech disorder experienced by individuals with stroke affects their quality of life. The Gülhane Aphasia Test- 2 (GAT-2) was used to evaluate speech and language functions of the individuals. Finally, objective sound analysis was performed with a mobile decibelometer and subjective sound analysis was performed with the Sound-Related Quality of Life Scale (VRAQOL). The mean age of the individuals participating in the study was  $54.50 \pm 18.85$ ; the mean of Mini Mental Test scores was  $25.33 \pm 1.96$ . According to the statistical results, a significant correlation was found between the BBT score and the SAQOL-39 scale mean score ( $r=0.899$ ;  $p<0.05$ ). No significant correlation was found between BBT score and GAT-2 ( $p>0.05$ ). However, there was a significant correlation between the eighth item of BBT and the repetition score of GAT-2 ( $r=0.821$ ,  $p<0.05$ ). A significant correlation was found between the SAQOL-39 scale mean score and the GAT-2 total score ( $r=0.829$ ,  $p<0.05$ ). In addition, a significant correlation was found between GAT-2 total score and VRAQOL score ( $r=0.812$ ,  $p \leq 0.05$ ). In this study, it was found that posture was not associated with speech function in stroke patients. It was observed that some parameters of balance affect speech function. It was found that balance problems and speech disorders affect the quality of life in stroke patients.

**Keywords:** balance, posture, quality of life, speech, stroke.

## Academics' Opinions on Faculty Development Workshop for Writing Multiple-Choice Questions: A Case Study of the Faculty of Health Sciences

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### Abstract:

One of the important tools for the academics in higher education institutions to continue their professional development and fulfill their duties in their institutes is Faculty Development Programs (FDP). In this study, it is aimed to present the opinions of the participants on the "Multiple-Choice Question Workshop (MCQ-W)" held within the scope of the FDP of Afyonkarahisar Health Sciences University Faculty of Health Sciences (AFSU-FHS). A descriptive, cross-sectional research design was employed in this study. All AFSU-FHS academics (n=38) comprised the research sample and were invited to the workshop. The workshop was conducted in two consecutive online sessions via Microsoft Teams: i) a short introduction to measurement and evaluation; and ii) formulating multiple-choice questions. Before the workshop, an online true-false test containing 15 statements about MCQ writing was sent to the participants. Post-workshop feedback was gathered from the participants with an online questionnaire consisting of six structured and four semi-structured open-ended items. The data was analyzed using Microsoft Excel and IBM Statistics SPSS v.25. Thirty-three (86.8%) academics attended the workshop, where 54.3% of them were faculty members. The majority of the participants were female (n=25, 75.8%). The pretest was completed by 25 (75.8%) participants, and the mean score was calculated as 70.1% of the possible maximum score ( $X=10.52\pm 2.14$ ). The feedback questionnaire was completed by 21 (63.6%) participants. The workshop was positively endorsed by the academics in all evaluation items, where 95.2% agreed that "*the workshop met my expectations*" and 94.7% agreed that "*after this workshop, I think I will be writing better quality MCQs.*" Participants stated that "*discussing and analyzing the MCQ examples*" and "*interactivity during the online meeting*" were the most useful features of the workshop. As a result, AFSU-FHS academics expressed their high satisfaction with the workshop. It has been seen that the workshop contributed to the increase in awareness, knowledge, and experience in MCQ writing. It can be suggested that the educational competencies of academics could be supported by ensuring the continuity of the FDP on a variety of topics in either online or face-to-face training.

Keywords: health sciences, faculty development, multiple-choice questions, evaluation.

## Clinical and genetic investigations of three Moroccan families with retinitis pigmentosa phenotypes<sup>#</sup>

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### Abstract:

Progressive inherited retinal dystrophies, characterized by degeneration of rod photoreceptors and then cone photoreceptors, are known as retinitis pigmentosa (RP), for which 89 genes have been identified. Today, only five Moroccan families with RP with a genetic diagnosis have been reported, justifying our investment in providing further clinical and genetic investigations of families with RP in Morocco. The clinical diagnosis based on a combination of a history of night blindness, abnormal rod or rod-cone responses in electroretinography (ERG), and constricted visual field or difficulty perceiving side objects identified three Moroccan families with an RP phenotype. Probands of these families underwent whole exome sequencing (WES), and candidate variants were evaluated for their segregation within family members. All patients had a history of night blindness and unrecordable rod and cone ERG traces. In addition, one patient had cystoid macular edema, and another had discrete autofluorescence abnormalities, in addition to ellipsoid zone disorganization and narrowed retinal vessels. WES sequencing revealed heterozygous compound mutations in *CRB1*:c.1690G>T//c.1913C>T and in *ABCA4*:c.5908C>T//c.6148G>C and a homozygous *PDE6B* splice mutation c.1920+2T>C. We provide the first description of Moroccan patients with the RP phenotype harboring pathogenic mutations in the *CRB1* and *ABCA4* genes and the second description of an individual with RP with a *PDE6B* mutation, associated with cystoid macular edema. These data contribute to expand the genetic diagnosis of RP phenotypes in Morocco.

Keywords: inherited retinal diseases, retinitis pigmentosa, Moroccan families, exome sequencing.

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*Oral Presentation*

## **Determination of the Relationship between Premenstrual Syndrome Frequency and BMI in Adolescents**

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### **Abstract:**

PMS consists of physical and/or psychological premenstrual symptoms that interfere with daily activities. PMS in adolescents is under-recognized and possibly under-treated. Not adopting a healthy lifestyle, lack of physical activity, poor diet and obesity cause many health problems. There is evidence that one of them is PMS. This cross-sectional study aims to examine the relationship between BMI values of adolescents and PMS. This cross-sectional study was conducted with 450 adolescents living in the province of Elazig, aged 12-18 years, who voluntarily agreed to participate in the study. The Premenstrual Syndrome Scale was used in our study. The mean age of the adolescents participating in the study was  $15.6 \pm 1.9$  years. It has been determined that the majority of the parents of the adolescents are university graduates and their income status is mostly good. It was determined that 41.8% of the adolescents were slightly overweight/obese. Presence of PMS was found in all adolescents. It was found that as the BMI values of the adolescents increased, their PMS levels increased ( $p < 0.001$ ). As the BMI value increases, the increase in PMS levels in adolescents draws attention to the control of body weight in this period. Gaining healthy eating habits will not only reduce PMS levels in adolescents, but also protect them against chronic diseases that may occur in the future. A healthy diet, regular exercise, avoidance of stressful events and gaining healthy sleep habits especially in the premenstrual period will be effective in reducing the level of PMS.

**Keywords:** Adolescent, PMS, BMI

*Oral Presentation*

## **The Effect of Psychological Violence (Mobbing) Perception on Job Satisfaction in Healthcare Professionals**

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### **Abstract:**

In these times when the value of healthcare professionals is better understood, psychological violence experienced by healthcare workers gains a special importance. Within the scope of this study, which deals with the effect of psychological violence (mobbing) perception on health workers' job satisfaction, a research was conducted on 199 healthcare workers in Kocaeli Province. Heinz Leymann's Psychological Terror Inventory (Mobing Scale) and Job Satisfaction Scale (Minnesota Job Satisfaction Scale (MSQ) were used within the scope of the research. SPSS 22 package program was used for data analysis in the study. Frequency, Independent T-test, One-Way ANOVA, Pearson correlation and Linear regression analyzes were used for analysis. The total mean of the mobing scale items is  $1.39 \pm 0.63$ . The average of all the items of the job satisfaction scale is  $2.71 \pm 0.93$ . There is a positive relationship between the Mobing scale and only the sub-dimension of external job satisfaction and social relations. In the regression analysis performed with external job satisfaction, a significant relationship was found with mobbing sub-dimensions and it explains 6.1% of the total variance on external job satisfaction of mobbing. According to the analysis results; Statistically significant differences were found between the variables of gender, age, education, occupation, working style and working year, and mobbing and job satisfaction scales. As a result of the study, mobbing was found to be low and job satisfaction was found to be moderate in health studies. In addition, it was concluded that mobbing negatively affects job satisfaction at a low level. There were also many significant differences with the socio-demographic characteristics of the participants. As a result of the study, it was concluded that the exposure of health workers to mobbing negatively affects their job satisfaction.

**Keywords:** psychological violence, mobbing, job satisfaction, health professional.

## **Comparative Effects of Radial and Focused Extracorporeal Shock Wave Therapies in Coccydynia**

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### **Abstract:**

We conducted this study to compare the effects of radial and focused extracorporeal shock wave therapies (ESWT) in coccydynia. Sixty patients with coccydynia were equally randomised into three groups according to different wave types of ESWT: Focused, Radial, and Sham. A total of 4 sessions of ESWT at 1-week intervals were applied to the sacrococcygeal area. All patients were evaluated at baseline (week 0) and after the treatment (weeks 4, 8, and 12) with Visual Analog Scale (VAS) and Oswestry Disability Index (ODI). There was no significant change in VAS and ODI scores at any control week in the Sham ESWT group compared to baseline ( $p>0.05$ ). Compared with baseline (week 0) the VAS scores of weeks 4 were reduced only in Radial ESWT group ( $p<0.05$ ). Compared with baseline the VAS and ODI scores of weeks 8 and week 16 were significantly reduced in both Focused and Radial ESWT groups (for all,  $p<0.05$ ). Radial group was significantly superior than Focused group based on the comparisons between the groups at week 4 in the VAS values, and at week 16 in the ODI scores (for all,  $p<0.05$ ). We found that both Radial ESWT and Focused ESWT were effective in treating coccydynia compared to Sham ESWT. However, it can be predicted that radial ESWT might be more effective in the treatment of coccydynia.

**Keywords:** coccydynia, shock wave, randomised sham-controlled trial.

## **Are 5G Technologies Dangerous For The Kidneys Of Diabetic Patients?**

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### **Abstract:**

The aim of this study was to explore the effects of fifth-generation (5G) Radiofrequency Radiation (RFR) emitted from mobile phone on histopathological changes in the kidney of diabetic and healthy rats. The study was carried out on 28 Wistar Albino adult male rats by dividing them into four groups: Healthy Sham (n=7), healthy 5G exposure (n=7), diabetic sham (n =7), diabetic 5G exposure (n =7). In the diabetic groups, diabetes mellitus was induced with 45 mg/kg streptozotocin (STZ). Rats in the exposure group were exposed to 3500 MHz RFR for 2h per day (5 days a week) for one month. The same procedure was applied to the rats in the sham groups except the generator was turned off. All the rats were sacrificed at the end of the experiment. Kidney tissues were collected for histopathological study. The SAR (Specific Absorption Rate) value was calculated as 1,02 W/kg. It was observed that kidney tissues of rats in healthy sham and healthy 5G exposure groups had normal histological structure. Tubular dilatation, enlargement of filtration range, atrophy of tubular microvilli were observed in Diabetic sham and Diabetic 5G exposure groups compared to the control group. However, these changes were found to be higher in the Diabetic exposure group according to Diabetic sham group. It has been determined that 5G RFR can increase diabetes-induced nephropathy, but it does not cause any effect in the kidney tissue of healthy rats. Based on this study, it is important to increase public consciousness of potential adverse effects of 5G RFR exposure.

**Keywords:** 5.Generation Technologies, radiofrequency radiation, diabetes mellitus, kidney.

<sup>#</sup>This work was supported by the Van Yuzuncu Yil University (grant number TYD-2021-9598).

## The Relationship Between the Attitudes of Midwifery Department Students Towards Euthanasia and Their Religious Attitudes

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### Abstract

**Aim:** This study was carried out to determine the relationship between the attitudes of midwifery students about euthanasia and their religious attitudes. **Method:** The cross-sectional study was administered between November and December 2021. The population of the research consists of students studying in the Department of Midwifery, Faculty of Health Sciences of a University. Power analysis was performed with the G-POWER program to calculate the sample size. The research was completed with 284 volunteer midwifery students. Department students were sent online (e-mail, whatsapp) and those who volunteered to participate in the research were asked to fill out the forms. Research data will be collected using the "Descriptive Information Form", "Health Professional Euthanasia Attitude Scale (HPEAS)" Ok-Religious Attitude Scale (Islam)(ORASI)". The SPSS 23.0 package program was used to analyze the collected data. **Findings:** The mean age of the participants was 20.64±1.67 (min. 17 - max. 36) years. While 85.2% of the participants stated that they would not want to have euthanasia, 87.7% said they would not want a relative to have euthanasia. Additionally, respectively 37.7% and 43% of the participants were against active and passive euthanasia, whereas 46.8% of those who were against active euthanasia or undecided about it and 42.3% of those who were against passive euthanasia or undecided about it reported that these views were based on their considering of these issues as "conscientiously disturbing". The mean total HPEAS score of the participants was found as 83.04±16.07 (min.: 43 - max.: 150), while their mean total ORASI score was determined as 34.01±6.00 (min.: 11 - max.: 40). Accordingly, the participants had moderate attitudes about supporting euthanasia, while their religious attitudes were positive. **Results and Conclusion:** As a result of this study, it was observed that most of the students had negative attitudes towards euthanasia, and one of the factors that affected these attitudes of theirs was religious belief. Midwifery students are among the healthcare professionals of the future. Hence, it may be stated that there is a need for more studies about the factors that influence their attitudes about euthanasia.

**Keywords:** Euthanasia, midwifery student, religious attitude,

## Features of lipid metabolism in patients with mechanical jaundice and hypertension

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### Abstract:

Hepatobiliary diseases of various etiologies are often accompanied by the development of cardiovascular problems with impaired lipid metabolism, and such a complication of gallstone disease as mechanical jaundice (MJ) in 90% of elderly patients is associated with hypertension. In MJ, cholesterol synthesis is disrupted due to blockade of bile flow to the intestine and changes in the enterohepatic circulation of bile acids, due to which there is excessive reverse activation of cholesterol synthesis by the liver. The aim of the work to identify features of changes in lipid metabolism in patients with MJ in combination with hypertension. 180 patients with MJ were examined with an average age of  $69.02 \pm 0.96$  years (women,  $n = 91$ ) and  $68.83 \pm 0.96$  years (men,  $n = 89$ ), of which 81.3% were women ( $n = 74$ ) and 85.4% of men ( $n = 76$ ) had concomitant hypertension. Studies of blood lipid spectrum were performed on a biochemical analyzer Mindray BS-240 using reagents "Shenzhen Mindray Bio-Medical Electronics co., Ltd". Significant increase in levels of total cholesterol ( $8.63 \pm 0.19 / 8.47 \pm 0.20$  mmol / l), triglycerides ( $4.98 \pm 0.21 / 4.86 \pm 0.20$  mmol / l), LDL ( $4.83 \pm 0.31 / 4.82 \pm 0.30$  mmol / l) and VLDL ( $2.28 \pm 0.10 / 2.22 \pm 0.09$  mmol / l) in women / men, respectively in the combination of MJ and hypertension, while in the absence of hypertension lipid metabolism in MJ were significantly lower: total cholesterol  $5.45 \pm 0.16 / 5.50 \pm 0.15$  mmol / l, triglycerides  $1.50 \pm 0.10 / 1.50 \pm 0.10$  mmol / l, LDL  $3.22 \pm 0.45 / 2.58 \pm 0.47$  mmol / l, VLDL  $0.69 \pm 0.05 / 0, 70 \pm 0.05$  mmol / l in women / men, respectively ( $p < 0.05$ ). Significantly lower levels of HDL ( $0.61 \pm 0.02 / 0.62 \pm 0.02$  mmol / l in women / men, respectively) were also registered in patients with MJ than in patients with hypertension (women -  $1.07 \pm 0.05$  mmol / l, men -  $1.10 \pm 0.06$  mmol / l;  $p < 0.05$ ). In the analysis of disorders of lipid metabolism in patients with hypertension, depending on the cause of MJ, significantly higher levels of the main indicators (total cholesterol  $10.19 \pm 0.129 / 10.22 \pm 0.30$  mmol / l, triglycerides  $7.39 \pm 0, 31 / 7.45 \pm 0.20$  mmol / l, LDL  $6.04 \pm 0.36 / 6.09 \pm 0.56$  mmol / l, VLDL  $3.39 \pm 0.09 / 3.42 \pm 0.09$  mmol / l in women / men, respectively,  $p < 0.05$ ) in the oncological genesis of MJ than in other causes. The presence of hypertension in patients with MJ complicates disorders of lipid metabolism due to the inclusion in the pathological process of additional mechanisms of disruption of membrane transport of cholesterol, and the most severe disorders of lipid metabolism are registered in patients with MJ and cancer genesis.

Keywords: mechanical jaundice, hypertension, lipid metabolism

*Oral Presentation*

## **Endothelial Nitric Oxide Synthase Glutamic Acid 298 Aspartic Acid Polymorphism Genotyping in Patients of End Stage Renal Disease**

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### Abstract

End stage renal disease (ESRD) or kidney failure is irreparable loss to kidneys and is a common problem all over the world. Despite of advanced diagnostic and treatment facilities the mortality rate from ESRD is still very high. Including many factors that play role in the onset of ESRD, endothelial nitric oxide synthase gene (eNOS) that codes for nitric oxide is also present. Nitric Oxide is important in vascular endothelial functions and defective role of nitric oxide synthase leading to reduced level of nitric oxide (NO) can lead to impaired hemodynamic and metabolic environment of kidney. Aim of this study was to find out relation between a polymorphism of eNOS gene Glutamic acid298Aspartic acid (Glu298Asp) and ESRD. We collected blood samples of 150 healthy controls and 150 ESRD patients on hemodialysis. DNA was extracted and polymerase chain reaction was done for the amplification of eNOS gene. Serum NO level was also measured. Genotyping was done by Restriction fragment length polymorphism method. Allelic frequencies of G and T were 174 and 126 respectively in controls and 189 and 111 in patients. GG genotype frequency was 54 in controls versus 60 in patients, TG was 66 versus 69 and TT was 30 versus 21 ( $p > 0.05$ ). Not observed any significant relation between SNP of eNOS Glu298Asp and ESRD. NO levels in serum were significantly ( $P=0.05$ ) reduced in mutant allele (T) carriers as compared to wild type carrier (G). In Pakistani population, no significant association was observed between eNOS Glu298Asp SNP and ESRD but mutant allele do influence on serum level of NO.

Keywords: genotyping, allele, restriction fragment length polymorphism

## **The Diagnostic Potential of Three-Dimensional Imaging in Orthopedic Dentistry**

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### **Abstract:**

The aim of the study was to experimentally determine the diagnostic capabilities of photogrammetry of the head and face in the clinical reception of a dentist-orthopedist. The scientific literature on the practical experience of using photogrammetry of the head and face in dentistry was studied. The experiment with the process of head and face photogrammetry using a computer-based three-dimensional model was held. The possibility of obtaining numerical data on the photogrammetric characteristics of the surface of the human face was studied. It was found that: photographing has to take place in a well-lit room with minimum amount of glare, shooting in three horizontal trajectories; the trajectory of the camera should create an imaginary semicircle centered on the bridge of the nose of the examined person, with a radius of ~1.5 m; horizontal shooting trajectories differ in the height of the camera trajectory and the angle of direction to the face; each next photo must contain more than 40% of the objects of the previous one; 9 photos are allocated to the upper and lower horizontal trajectories; each subsequent photo has to be done when the camera moves 20% of the radius from the center of the semicircle to the place of the previously taken photo; only one horizontal trajectory consists of 18-20 photos; 5 photos are needed from the level of the hyoid bone to the bridge of the nose; 3-5 photos from a bigger from the center of the semicircle distance of 3-4m. The informativeness of the photogrammetry method for use in the practice of a dentist has been experimentally proven. The optimal shooting algorithm for obtaining models was experimentally invented; photographing techniques were tested for further creation of face 3D models. Conditions and algorithms of head and face photogrammetry have been developed and verified. Considering essential economic availability and competitiveness from the diagnostic value point of view and informativeness of the presented method, its upgrading should take place in the direction of maximum adaptation to stomatological specificity.

**Keywords:** three-dimensional imagining, photogrammetry, scanning in dentistry.

*Oral Presentation*

## **Telmisartan and Irbesartan Augment Glyoxalase 1 Activity and Glutathione Concentration (A Preliminary Study)**

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### **Abstract:**

Cardiovascular diseases are the most common cause of death in people with diabetes. Methylglyoxal (MGO) is a reactive glycolysis by-product, detected as elevated in diabetics. MGO activates the renin-angiotensin system and elevates blood pressure. Thus, angiotensin II receptor blockers (antihypertensive drugs) such as telmisartan and irbesartan might be effective to reduce MGO concentration. Telmisartan and irbesartan could increase glyoxalase 1 (Glo1) activity, the main enzyme of the MGO detoxifier glyoxalase system, and concentration of its coenzyme, reduced glutathione (GSH). Vascular smooth muscle cells (VSMCs) are one of the main components of the vascular wall and play a crucial role in both hypertension and diabetic accelerated atherosclerosis. Primary cultured VSMCs were isolated from rat aorta. MGO-treated cells (200  $\mu$ M) were incubated in standard (5.5 mM) or high glucose (25 mM) media for 48 hours with or without telmisartan or irbesartan (both 10  $\mu$ M). Glo1 activity was determined by Glo1 activity kit and GSH concentration was measured by a fluorometric assay kit. MGO elevated Glo1 activity and GSH concentration in high glucose media but not in standard media. Telmisartan and irbesartan augmented Glo1 activity and GSH concentration in both media. Telmisartan raised Glo1 activity and GSH level more in both media compared to irbesartan but there was not any significance. It is highlighted in the literature that GSH concentration is proportional to Glo1 activity. My results support this phenomenon. MGO-induced Glo1 activity and GSH elevation in high glucose media might result from high substrate flux. My study showed that angiotensin II receptor blockers telmisartan and irbesartan augmented Glo1 activity and GSH concentration effectively. Enhanced Glo1 activity may be the result of elevated GSH levels. Other receptor blockers might display a similar effect. Prescribing telmisartan and irbesartan to hypertensive diabetic patients could provide additional benefit against MGO-induced dicarbonyl stress and diabetic complications. Further studies are needed to fully understand renin-angiotensin and glyoxalase system relationships.

**Keywords:** glutathione, glyoxalase 1, high glucose, methylglyoxal, vascular smooth muscle cell.

## **Using of modified external fixator in extremities long bone fractures in cats**

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**Abstract:**

In this study, diaphyseal fractures on extremity long bones of cats clinical and radiological evaluation of the results of the treatment by using modified external fixator. The material for this study was composed of 20 cats in total with different races, ages and genders. According to the postoperative clinical and radiological evaluations; the results were very good in 16 cases, good in 1 cases and average in 1 case. 2 cases could not follow up. As a result; it was concluded that the use of modified external fixator alone or pin and cerclage wire together, extremities long bone fractures like humerus, antebrachium, femur and tibia constitutes succesful results.

**Key Words:** Cats, external fixator, extremity, fracture, trauma, treatment.

## **Amniotic Fluid Derived Stem Cells as a Promising Stem Cell Type: Isolation, Characterization, and Inter Passage Comparison**

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### **Abstract:**

Stem cells had been considered as a promising therapeutical tool since their discovery as they show great potential to be utilized especially in regenerative medicine. Due to unavailability of totipotent and pluripotent stem cells mainly because of the ethical concerns, multipotent stem cells had been the regular cell type for stem cell research. There are numerous cell sources for isolating multipotent mesenchymal stem cells which had different origins and slightly different cellular potencies. The potency of the stem cell is one of the absolute focal points for researchers to achieve better results. Although bone marrow derived mesenchymal stem cells still stand as the most preferred stem cell type, amniotic fluid derived mesenchymal stem cells are gaining popularity as they proved to have some pluripotent properties and there are less ethical concerns addressed to their isolation. Therefore, a better understanding should be established for this relatively under studied cell type to fully understand its nature and potential. In this study, amniotic fluid of Wistar rats were collected and amniotic fluid derived mesenchymal stem cells were isolated. The cells were investigated for their morphology, multi-lineage differentiation potential and growth curve pattern. The isolated cells were also tested for their mesenchymal, hematopoietic, and pluripotent characters in different passages by real-time PCR analysis. The results of the study confirmed the mesenchymal character of the isolated cells. Also, the cells were proved to express some pluripotent properties. In addition, some inter-passage differences were noted in the context of mesenchymal, pluripotent and hematopoietic markers by PCR.

**Keywords:** amniotic fluid, mesenchymal stem cells, differentiation, multipotent, pluripotent.

This study was supported by Afyon Kocatepe University Scientific Research Projects Coordination Unit (Project No: 18.SAĞ.BİL.04).

*Oral Presentation*

## **A Magnetic Platform (SPION Loaded PLGA Nanofibers) for Neural Differentiation of Mesenchymal Stem Cells**

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### **Abstract:**

Recently, magnetic platforms have been widely investigated in diagnostic, therapeutic and research applications due to their noticeable properties such as cell and tissue tracking and imaging, thermal therapy, being dirigible, etc. In this study, incorporation of magnetic nanoparticles in nanofibers has been proposed to combine the advantages of both nanofibers and magnetic nanoparticles for neural differentiation of mesenchymal stem cells. Magnetic PLGA nanofibers (containing 0%, 5% & 10% SPION) were fabricated and utilized as the matrix for MSCs differentiation. Morphological, magnetic and mechanical properties were analyzed using FESEM, VSM and tensile test, respectively. Neural markers expression (TUJ-1, NSE, MAP-2) was assessed quantitative and qualitatively utilizing RT-PCR and immunocytochemistry. Results confirmed the incorporation of magnetic nanoparticles in nanofibrous scaffold, presenting a ferromagnetic behavior (saturation magnetization of 9.73 emu/g). Also, with increase in magnetic particle concentration (0 to 10%), tensile strength increased from 4.08 to 5.85 MPa while conversely elongation percent decreased. TUJ-1 expression was 3.8 and 1.8 fold for 10% and 5% magnetic scaffold vs non-magnetic scaffold and expression of NSE was 6.3 and 1.2 fold for 10% and 5% respectively. Consequently, it seems that incorporation of magnetic biomaterial can promote the neural differentiation of MSCs in which the augmentation of SPION concentration from 0 to 10% accelerates the neural differentiation process.

**Keywords:** magnetic scaffold, SPION loaded nanofibers, neural differentiation, mesenchymal stem cells

## Investigation of the Release of Growth Factors from Nanofiber Mat Loaded with Apheresis Platelet Concentrate (APC) #

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### Abstract:

In this study, the production of APC-loaded nanofiber mats using the electrospinning method and examining the release of growth factors from the produced APC-loaded nanofiber mats was planned. Materials and Methods: APC-loaded composite nanofiber mats (n=5) were produced using the electrospinning system in textile engineering laboratory. The surfaces morphologies of the produced mat were examined using a scanning electron microscope. Studies for release were carried out at department of immunology. PBS (0.5 mL) was collected at 0, 48, 96, 144, 192, 240, 288 and 336 hour intervals for the analysis of growth factors to be released into PBS from APC-loaded nanofiber mat. Collected PBSs for quantitative analysis of growth factors and BCA (Bichchoninic acid) protein concentration analysis were stored at -20°C for analysis. The growth factors released from APC-loaded composite nanofiber mat into PBS at certain time intervals, Epidermal growth factor, EGF; Basic fibroblast growth factor, bFGF; Platelet-Derived Growth Factor AA (PDGF-AA) quantitative analyzes were performed with the technology laboratory ELISA Kit (Elabscience, USA) as recommended by the manufacturer. Results: When the release amounts between FGF, EGF and PDGF groups were compared, a significant difference was found in all time periods from the 48th hour to the 336th hour (respectively, p=0.004, p=0.008, p=0.006, p=0.009, p=0.009, p=0.009; p<0.05). When the time-dependent release changes within each group were examined, there was no statistically significant difference in the FGF group (p=0.084; p>0.05), but there was a significant difference between the EGF and PDGF groups (p=0.012, p=0.016; p<0.05). It was observed that there was a significant difference between the 48th hour and the 288th and 336th hours in the EGF group, and lower release occurred at these hours. In the comparison made for PDGF, it was seen that there was a significant difference between the 48th hour and the 192nd and 288th hour, and lower release was realized at these hours. Conclusion: It is thought that the results to be obtained from the research are useful in terms of using APC-loaded nanofiber mats as a wound dressing in future research and providing scientific data.

Keywords: growth factors, nanofiber, release, apheresis platelet concentrate.

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## **Explant Culture of Adipose Tissue: A Preliminary Study**

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### **Abstract:**

Stem cell therapy is considered as a beacon of hope in many incurable diseases and stem cells is used in the treatment of various diseases in medicine and veterinary medicine. Despite of being very common in pet animals and equine in the field of veterinary medicine; stem cell based practices in bovine yet remain very limited. Mesenchymal stem cells (MSCs) are multipotent cells that can be obtained from many tissues of mesodermal origin. Adipose tissue derived stem cells showed multipotent properties as they are able to differentiate into both osteogenic, adipogenic and chondrogenic lineages. In this study, it was aimed to obtain stem cells from bovine adipose tissue by explant culture method. The use of slaughterhouse material in the study eliminates ethical problems, and also provides an advantage in terms of the amount of tissue and cells to be obtained from cattle. Subdermal adipose tissue samples were collected into sterile tubes which contain sterile 0.9% NaCl solution with 2% penicillin-streptomycin (10000 U/mL) and 0.2% amphotericin-B. After sterilizing the tissue with betadine, samples were suspended further in 0.9% NaCl + 2% penicillin-streptomycin mixture (10000 U/mL) in order to clear betadine. Outer lining of the tissue was discarded and tissue samples were mechanically split into smaller parts. The remaining tissue parts were seeded into culture flasks with medium supplementation and incubated at 37 °C in 5% CO<sub>2</sub>. MSCs were isolated by explant culture method. Isolated cells were having fibroblast-like morphology. The medium was changed in every three days and cells were passaged when they reach %80 confluence. Explant culture method is believed to be an easy and more economical way to harvest stem cells. The further genetic and molecular characterization of the isolated cells along with multi-lineage differentiation studies are planned.

**Keywords:** adipose tissue, explant culture, stem cell

*Oral Presentation*

## **Isolation of Commensal Escherichia coli From Cow Manure Resistant to Third Generation of Cephalosporins**

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### **Abstract:**

Abuse or overuse of various  $\beta$ -lactam antimicrobials for purposes like curative, prophylactic or as growth promoters are key drivers of selective pressure, emergence and dissemination of resistant commensal E. coli, respectively extended-spectrum  $\beta$ -lactamases (ESBLs) conferring resistance to new generations of  $\beta$ -lactams-Oxyimino-cephalosporins. During lactating period dairy cows are frequently treated with different  $\beta$ -lactams for mastitis or other medical indications. The above facts became the aim of this study, to detect and isolate commensal E coli from dairy cow manure resistant to III generation of cephalosporins. For detection we used MacConkey agar supplemented with 1gr/L of Cephotaxime, and determining the minimal inhibitory concentration and phenotypic properties of each isolate. For this purpose we used ISO 20776-1, based on broth micro-dilution method by using commercial panels EUVSEC 1 and 2, strictly following recommendations of breakpoints and technical aspects of European Committee on Antimicrobial Susceptibility Testing. During the period from June 2019 to February 2020, were collected 159 fecal samples from 34 dairy farms. Results show 39(24.5%) resistant isolates from 11(32.3%) positive farms. Out of the 39 isolates, 38 (97.4%) were ESBL and/or AmpC resistant, while 1 isolate (2.56%) was carbapenemase resistant. No oxacilinase resistant isolates were found. No resistance to COL, TGC, IMI, TRM, MERO, F/C and T/C was observed. All the isolates showed multiple antimicrobial resistance. This study is still ongoing.

**Key words:** cefotaxime, commensal e. coli, antimicrobial resistance, dairy cow manure

## Comparison of four commercial methods for the extraction DNA by two molecular methods for *Tritrichomonas foetus* DNA identification in spiked feline feces

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### Abstract:

*Tritrichomonas foetus* is a parasitic protozoan which causes a disease called trichomonosis in cats worldwide. Infected animals may display a large bowel chronic disease characterized by increased frequency of defecation, mucus, flatulence, hematochezia and tenesmus. However, due to low specificity, it is difficult to identify a parasite only based on clinical signs. Therefore, molecular tests are currently used for detection of *Tritrichomonas foetus* in cats. Because of the possible presence of gastrointestinal pathogens in feces, it is an excellent material for diagnosis of infectious diseases, including feline trichomoniasis. However, the extraction DNA from feces can be quite challenging because of the presence of PCR inhibitors that are coextracted with DNA. In our study, four commercially available DNA extraction and purification kits were compared in terms of their effect on the sensitivity of the Felleisen PCR and the in-house LAMP test for the identification of *Tritrichomonas foetus* in feline spiked samples. Feline *T. foetus* cells were cultivated in Diamond medium and in order to evaluate the effectiveness of the four extraction methods, fecal samples from clinically healthy cats were spiked with an appropriate number of protozoan cells (series of dilutions corresponded to 10000, 1000, 100, 10, 1 and 0.1 cells per sample, each variant in 6 replicates). DNA of *T. foetus* from feces was extracted using: QIAamp<sup>®</sup> DNA Stool Mini Kit (Qiagen Inc., Valencia, CA), UltraClean Fecal DNA Kit (50 preps) (MO BIO, San Diego, CA), Sherlock AX / 100 isolation (A&A Biotechnology, Gdynia, Poland). In order to assess the effectiveness of four extraction methods PCR according to Felleisen, enabling the amplification of 5.8S rRNA fragment, ITS1 and ITS2, as well as own method LAMP with the use of primers complementary to the sequence of gene coding  $\beta$ -tubulin were used. The ZR Fecal DNA MiniPrep was identified as providing the highest analytical sensitivity where it could detect 1 *T. foetus* cell per 150 mg of feces in a 100% PCR reaction according to Felleisen as well as the LAMP assay. Moreover, the identified extraction method could be performed in the shortest time among all the tested kits.

Keywords: *Tritrichomonas foetus*, DNA, extraction methods, molecular tests, diagnostic methods.

This research was funded by National Veterinary Research Institute in Puławy, Poland (statutory funds no. S/376).

Oral Presentation

## Theoretical prediction of *Staphylococcus aureus* and *Pseudomonas aeruginosa* adhesion on 3D printing filament materials

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### Abstract:

Initial adhesion of nosocomial pathogens on substrata is an important stage of biofilm formation. In the absence of hygiene measures, medical equipment in contact with biological fluids were be exposed to many pathogens microorganisms. These different entities can adsorb and / or adhere to a surface and colonize it, which present a difficulty of treatment with conventional antibiotics. In this study, the first of its kind on 3D printing materials, the predictive ability of *Staphylococcus aureus* and *Pseudomonas aeruginosa* as nosocomial germs to adhere on four 3D printing filament surfaces was investigated. Thus, the physicochemical properties of these microorganisms and all printing materials were determined using the contact angle measurements. We found that bacterial surface were hydrophilic, strongly electron donating and weakly electron accepting. In contrast, nylon, acrylonitrile butadiene-styrene (ABS) and polyethylene terephthalate (PET) surfaces were hydrophobic, exhibits a character relatively more electron-donor than electron-acceptor. While, polylactic acid (PLA) surface showed qualitatively hydrophilic. In addition, according to the values of total free interaction energy  $\Delta G^{\text{Total}}$ , *S.aureus* was unable to adhere to the filament materials except PET surface. However, *P.aeruginosa* showed adhesion capacity only for ABS and PET surfaces. These results showed the high importance of acid base parameters than (LW) interactions.

Keywords: 3D printing, material filaments, bacterial adhesion, contact angle.

## **Examining of Fear of Birth and Prenatal Attachment in Expectant Mothers and Fathers**

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### **Abstract**

Aim of the research is to examine fear of birth and prenatal attachment in expectant mothers and fathers. The descriptive and cross sectional research was carried out between December 2019 – May 2020. The sample of the study consisted of a total 288 participants, 202 of which were expectant mothers and 86 fathers. Inclusion criteria for the study were defined as being literate, being over the age of 18, being in the second or third trimester of pregnancy, feeling the baby movements and participating voluntarily. For mothers; Visual Analog Scale to evaluate fear of childbirth and Maternal Fetal Attachment Scale were used; as for fathers; Visual Analog Scale and Paternal Fetal Attachment Scale to evaluate prenatal attachment were used. The relationship between the variables was tested with parametric and nonparametric tests. The simple linear and multivariate linear regression analysis were implemented for independent variables affecting prenatal attachment in expectant mothers and fathers. Mean age of expectant mothers was  $28.98 \pm 5.73$ ; mean age of expectant fathers was  $33.52 \pm 5.00$ . The mean fear of childbirth score evaluated by VAS of expectant mothers was  $5.13 \pm 3.17$  as for expectant fathers, it was  $5.01 \pm 2.83$ . The difference was not found to be significantly. While the mothers have mostly fear of birth pain and the health of the baby, the fathers specify that they have fear about their spouse's pain and their health. Fetal attachment scores of expectant mothers were  $96.68 \pm 10.23$  and fathers were  $92.89 \pm 12.48$ . The scores of mothers were found to be significantly higher. Attachment scores of mothers with low education level, multiparous and unplanned pregnancy and fathers with low economic status were found to be lower. There was no significant relationship between birth fear scores and attachment scores of expectant mothers and fathers. In the regression model, parity and planned pregnancy in expectant mothers explain 8.4% of the model, and economic status explains 7.3% of prenatal attachment in fathers. As a result of the research, it was found that the birth fear levels of mothers and fathers were similar. Another result of the research is that mothers' attachment to the fetus is higher than of fathers' attachment.

**Keywords:** pregnancy; fear of childbirth, attachment, mother, father

## **Epidemiology of Bovine Tuberculosis from Past to Present in Turkey**

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### **Abstract:**

Bovine tuberculosis (bTB) is a zoonotic disease that is endemic in our country. Efforts to fight bTB disease in the Ottoman Empire started simultaneously with the rest of the world in the last years of the nineteenth century. For the first time in Turkey, tuberculin was applied to 7,335 cattle in Istanbul in 1929, and 676 (9.21%) reactors were detected. Tuberculin was administered to 43,439 cattle on the Eskişehir-Ankara-Çubuk line between 1937-1938, the second known sounding study on bTB, and positivity was detected in 581 (1.33%). While 10% of reactors were found as a result of tuberculin application in state livestock institutions in 1938, this rate decreased to 0.39% in 1962 as a result of the struggle. In 1949, an average reactor rate of 6% was determined in the large sounding study carried out by applying tuberculin to 23,400 animals in 17 provinces. In a study conducted in Turkey in 2000, positivity was found in 522 (9.9%) of the 5,257 animals that had tuberculin. Finally, in a study conducted in 2011 with the application of tuberculin in 2,857 herds on a national scale, the prevalence of individual cattle was reported as 1.4% and approximately 2.5% in cattle herds. However, the number of bTB outbreaks has been increasing rapidly in recent years. The results obtained from the Official Veterinarian and breeder surveys, which were prepared in order to identify the epidemiological reasons for this increase on a national scale in 2020, were evaluated. In addition, the opinions of the breeders who owned the outbreak enterprises and the Official Veterinarians who followed the disease in these enterprises visited on site were compiled. As a result of this research, it was understood that 35-55% of the animals due to tuberculin application in the outbreak enterprises were slaughtered or died. These rates and the information we have obtained from the field indicate that there is a significant national increase in the prevalence of bTB. In conclusion, conducting a pilot survey to represent the national animal population with tuberculin screening to determine the current bTB prevalence shows that it is important for the determination of the national fighting strategy.

**Keywords:** bovine tuberculosis, epidemiology, fighting strategy, prevalence, surveillance

<sup>#</sup> This research was supported with the national project numbered TAGEM/HSGYAD/Ü/20/ A5/P1/1643 by the Ministry of Agriculture and Forestry, General Directorate of Agricultural Research and Policies.

## Some Information About *Brucella* Field Strains Isolated in Turkey in 2021

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### Abstract:

Brucellosis is a common zoonotic disease that is prevalent in Turkey as well as in especially Mediterranean countries and in the world and causing serious economic losses. The study of the Evaluating the *Brucella* species and its biovars circulating in the field have been conducting associated with mass vaccination programme starting in 2012 in Turkey. The guidelines recommend that bacterial culture method is the gold standard in the diagnosis of Brucellosis. Thus, classical methods are used in determining of *Brucella* spp and biovars. The aim of this study is to determine species, biovar and geographical distributions of *Brucella* field isolates sent from Marmara region and other regional institutes for biotyping to the Turkish National Brucellosis Reference Laboratory in 2021. A total of 401 isolates were collected in the Reference Laboratory in 2021. Of these isolates, 338 were from cattle, 53 from sheep and 10 from goats. As a result of the study, the most causative agent was isolated from cattle, and it was determined that the dominant species was *B. abortus* bv.3. *B. melitensis* bv3 is dominant biovar in sheep but there was an increase was observed the number of atypical *B. melitensis* bv3 strains such as susceptibility to dyes or antibiotics. Also *B. melitensis* bv3 was determined as dominant species in goats. Among the vaccination-induced abortion cases *B. melitensis* Rev-1 vaccine strain was isolated in 1 goat, *B. melitensis* Rev-1 vaccine strain was isolated in 6 of sheep isolates (8.83%) similarly *B. abortus* S-19 vaccine strains were isolated from 2 of cattle. It was determined that 62.59% of the samples were *B. abortus* bv3 from cattle. In addition, 1 *B. abortus* bv4 was isolated. Interestingly, *B. abortus* bv3 and *B. abortus* bv1 strains were detected in goats. The dominant species was 4 *B. melitensis* bv3 (40%). It is important to be determined whether the source of abortion is vaccine or infection with the biotyping method. In terms of disease control, monitoring of the agent with biotyping and some advanced molecular-based methods (MLVA, MLST, WGS) and detection of the dominant biotype and genotype are important for eradication strategies.

Keywords: biotyping, *Brucella* spp., biovars, isolation, epidemiology

## **Biofilm Formation of *Azotobacter* Isolates under Different Temperatures and Phosphate Levels**

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### **Abstract:**

Inoculation of agriculturally important biofilms to plant roots under unfavorable conditions to protect beneficial microorganisms and increase plant growth has been a popular practice in recent years due to their great potential in agriculture. Biofilm formation of *Azotobacter* spp. was examined under different temperatures (18, 28, and 37°C) and phosphate levels (0, 10, 50, 100, and 200 µM), and quantitatively measured by crystal violet staining method. *Azotobacter* spp. formed different levels of biofilms. Biofilm formation at 28°C was consistently higher than at either 18 or 37°C in all the strains tested ( $p < 0.05$ ) even though the growth rate of the strains was higher at 37°C. The higher biofilm production at lower temperatures might be due to the increased viscosity and production of exopolysaccharides. *A. chroococcum* and *A. vinelandii* strains produced the highest levels of biofilm formation at 28°C. *A. tropicalis* isolates revealed a moderate level of biofilm formation. The lowest level of biofilm production was found in *A. beijerinckii*. There was a strong negative correlation between biofilm formation by all strains tested and increasing phosphate concentrations. Although the growth rate of all the strains tested was higher under phosphate-replete conditions, biofilm production by the strains significantly decreased. Biofilm formation was higher under phosphate-limiting conditions, which might be explained by enhanced alginate production through GacS/GacA two-component signal transduction system.

**Keywords:** *Azotobacter*, biofilm formation, temperature, phosphate

Oral Presentation

## Combined Effect of Two Medicinal Plants; Garlic (*Allium Sativum* L.), Onion (*Allium Cepa* L.) With Probiotics Against *Helicobacter Pylori*

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Abstract:

*Helicobacter pylori* causes gastritis, gastric cancer and peptic ulcers and affects more than half of the world's population. Despite the fact that this infection can have serious implications, most infected people present moderate gastritis. While no new cure or remedy have been discovered, the present therapy still depending on a variety of known antibiotics and anti-secretory agents, with a standard triple therapy of two antibiotics and a proton-pump inhibitor suggested as the first-line regimen. Many determinants for prosperous therapy are elaborated, in particular individual primary or secondary antibiotic resistance, patient compliance, side-effect profile, mucosal drug concentration and also cost. In the present study, we discuss alternatives therapies for *H. pylori*, mainly phytotherapy and probiotics. The potential of combination between methanolic extracts of two medicinal plants; garlic (*Allium sativum* L.),onion (*Allium cepa* L.) and different strains of lactic acid bacteria ; *Bifidobacterium breve*, *Bifidobacterium bifidum*, *Bifidobacterium longum*, *Lactobacillus rhamnosus* LA80, *Lactobacillus rhamnosus* GG, *Lactobacillus helveticus*, *Lactococcus lactis*, *Streptococcus thermophilus*, *Lactobacillus plantarum*, *Lactobacillus acidophilus*, *Lactobacillus fermentum* and *Lactobacillus casei* against *H. pylori* was investigated. *H. pylori* was inhibited by all combined mixtures of extracts and probiotics with different varying results, while garlic / *B.breve* and onion / *B.breve* combinations exhibited the higher anti-*Helicobacter pylori* activities with DZI of 23 and 25 mm respectively. Preliminary studies on the mode of action of probiotics against *H. pylori* revealed that the inhibition may be due to lactic acid and bacteriocins. Also, it may be related to the presence of phenolic compounds in our studied plants such as gallic acid, caffeic acid, quercetin, and vanillic acid. This research demonstrates the synergic effect of garlic and onion with beneficial lactic acid bacteria for *H. pylori* inhibition.

Key Words: *Helicobacter pylori*, Garlic, Onion, Probiotics, Antibacterial effect

## **Characterization of *Escherichia coli* From the Isolates of the Burn Wound**

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### **Abstract:**

Bacteria with resistance to the currently used antibiotics used are emerging as a serious global health problem and one of the main issues to be dealt with in burn patients. Despite significant advances in antimicrobial treatment, the risk of infection-related death in burn patients remains relatively high. Therefore, it's critical to identify and characterize the bacteria that cause infection in burn patients. Burn wounds are commonly associated with *Escherichia coli*. Therefore, the characterization of *Escherichia coli* in burn wounds is critical due to having the capacity to cause different complications and aimed to investigate in the study. A total of 147 clinical samples were collected from two hospitals (Azadi Hospital & Duhok Burn Hospital) in Duhok, and taken from these patients in the period between 1/03/2021 to 10/10/2021. The Vitek-2 system was used to explore the identification of bacterial profiles in the samples as well as their susceptibility. Furtherly, the genotyping of *Escherichia coli* in the isolates was determined using the PCR technique after performing DNA isolation. 17% (25 samples) out of 147 samples were identified to be positive for *Escherichia coli*. All of the *Escherichia coli*-positive samples were found to be resistant to cephalothin, cephradine, piperacillin, and rifampin. While the rate for amoxicillin+clavulanic acid and ampicillin was 96%, this ratio was found to be 92% for amikacin and cefotaxime. The multidrug-resistant bacteria like *Escherichia coli* is one of the main challenges for clinical applications, and its characterization has vital importance in terms of the development a proper treatment strategy. The development of effective medicine will improve the patient's quality of life while lowering the mortality rate. As a result, our research is beneficial and adds to the body of knowledge. It would be beneficial to replicate the study with bigger populations, as our study's main weakness is the use of a small sample size.

**Keywords:** Burn wound, *Escherichia coli*, genotyping, and antibiotic resistance

## **Isolation and Characterization of *Klebsiella Pneumoniae* From Urinary Tract Infection**

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### **Abstract:**

*Klebsiella pneumoniae* is a gram-negative bacterium and found in the human intestine, mouth, and skin without causing harmful effects to human physiology. However, if it aspirates into other regions of the body, it can cause a number of diseases, including urinary tract infections (UTIs) especially in hospital. UTIs are the most frequent bacterial infection and *K. pneumoniae* was one of the most common pathogens responsible for UTI. Since *K. pneumoniae* shows resistance to most antibiotics currently used, and despite antimicrobial therapy, its infection has a significant fatality rate. *K. pneumoniae* has emerged as a serious global health concern, and its characterization in the disease has vital importance. Therefore, the isolation and characterization of *K. pneumoniae* in the samples taken from patients with UTI was aimed in this study. A total of 170 clinical samples were collected from two hospitals in Duhok from patients (Male and Female) of age range between ( $\leq 10-70$ ) years in the period between 1/03/2021 to 10/10/2021. The samples were analyzed microscopically, biochemically and molecularly. 27 out of 170 samples were identified to be positive for *K. pneumoniae*. Then, the disc-diffusion method was used to analyze the susceptibility of 25 isolates to the 15 most commonly used antibiotics. While all of the isolates were found to be resistant to cefradine and cephalothin, the rates for amoxicillin+clavulanic acid, Ampicillin, Rifampin resistance was 97.5%. Against the antibiotics of piperacillin and cefotaxime, this ratio was determined as 95% and 90%, respectively. The multidrug-resistant bacteria like *K. pneumoniae* are one of the main challenges for clinical applications, and its characterization has vital importance in terms of the development of a proper treatment. The implementation of appropriate treatment will improve the patient's quality of life while also lowering the hospital's cost burden.

**Keywords:** Urinary tract infection, *K. pneumoniae*, genotyping, antibiotic susceptibility test

## **Histological Study of Platelet-Rich Plasma-added Vitrification Solution In Rat Ovarian Tissue Vitrification**

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### **Abstract:**

Oocyte and embryo cryopreservation are among the options to preserve fertility in patients who will receive gonadotoxic treatment due to cancer or non-cancer reasons, especially in prepubertal age patients and those who want to delay fertility. In these cases, ovary cryopreservation offers an alternative brilliant option. Although successful examples of ovarian tissue cryopreservation procedures including healthy pregnancies and healthy live births are available in the literature, there is still a need to improve the procedures. The use of platelet-rich plasma (PRP) as an alternative to fetal bovine serum to support cellular functions and to reduce cellular damage caused by cryopreservation and cryoprotectant agents has been the subject of our study. PRP, which is a blood product obtained by condensation of platelets, is frequently used in regenerative medicine. For the first time in the literature, whole rat ovarian tissues were vitrified by calcium-activated autologous PRP-added vitrification solution and compared with the group that was vitrified by FBS-added vitrification solution via biochemical and histochemical investigations. The primordial follicles were preserved, but degeneration of the follicles at the advanced stage of follicular development was increased. The degenerations due to vitrification were observed in both experimental groups compared to the control group. However, calcium used in PRP activation was found to aggregate the harmful effects of vitrification and increase the degeneration of ovarian tissue and prevent the possible positive effects of PRP. It was concluded that PRP to be added to the solutions should be activated with a lower amount of calcium or non-activated PRP should be considered in the rat ovarian tissue vitrification. Preserving the ovaries as small cortical pieces may yield more successful results.

**Keywords:** fertility preservation, cryopreservation, ovarian tissue vitrification, platelet-rich plasma.

*Oral Presentation*

## **First Molecular Detection of Chicken Anemia Virus (CAV) and *Gyrovirus galga 1* from Domestic Pigeons (*Columba livia domestica*) in Turkey**

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### **Abstract:**

Chicken anemia virus (CAV) and Gyrovirus galga1 (GyV glg1) together belong to the Gyrovirus genus of the Anelloviridae family. Gyroviruses have small, circular, single-stranded DNA genomes. To date, 10 species have been identified in the genus Gyrovirus. These 10 different Gyrovirus species have been detected in chickens as well as humans, rodents and various domestic animals. In this study, we aimed to investigate the presence of CAV and GyV glg1 in clinically healthy domestic pigeons. For this purpose, a total of 103 stool samples were collected from 11 clinically healthy domestic pigeon flocks (9-10 from each flock) from Sivas, Elazig, Malatya and Tokat provinces. Each stool sample was diluted 10% with sterile PBS and homogenized. The homogenates were centrifuged at 3000 rpm for 10 minutes and DNA was extracted from the supernatants using a commercial DNA isolation kit. Nested primer sets designed for this study were used, targeting the VP1 gene region of the viral genome for CAV and the VP2 gene region for GyV glg1. PCR products were further analysed by electrophoresis in a 1.5% agarose gel stained with ethidium bromide. According to PCR results, 23 (22.3%) of 103 stool samples were found to be positive for CAV and 78 (75.7%) for GyV glg1. The 355 bp partial sequences of the VP1 gene region of CAV and the 560 bp partial sequences of the VP2 gene region of GyV glg1 were compared with other accessible CAV and GyV glg1 sequencing data in NCBI database. In conclusion, our study provided the first information of the prevalence of CAV and GyV glg1 in domestic pigeons in Turkey and revealed the partial genomic data obtained from domestic pigeon faecal samples. This is also the first report of CAV and GyV glg1 in domestic pigeons in Turkey.

**Keywords:** CAV, GyV glg1, domestic pigeon, phylogenetic analysis, Turkey.

## **The First Molecular Detection of Two Gyroviruses (Chicken Anemia Virus and Gyrovirus galga 1) from Domestic Cats in Turkey**

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### **Abstract:**

Gyroviruses are one of 31 genera in the family Anelloviridae. The prototype of the gyrovirus genus is Chicken anemia virus (CAV). There are 9 other species in this genus besides CAV. Gyroviruses are small, single-stranded circular DNA viruses. These 10 different Gyroviruses have been detected in chickens, humans, rodents and various domestic animals. In addition to CAV, different types of Gyrovirus have been reported in the feces of domestic cats to date. The main purpose of this study was to detect the presence of CAV and Gyrovirus galga 1 (GyV glg1) in domestic cats with diarrhea using molecular techniques. For this purpose, 91 rectal swab samples were taken from cats with diarrhea of different ages and different genders. Samples were collected from "Sivas Cumhuriyet University Faculty of Veterinary Medicine Animal Hospital" and private veterinary clinics. The following sets of nested primers designed for this study were used, targeting the VP1 gene region of the viral genome for CAV and the VP2 gene region for GyV glg1. According to the PCR results, 32 (35.16%) of 91 cat stool samples were found to be positive for CAV, while 67 (73.63%) were found to be positive for GyV glg1. Amplicons were subjected to gel electrophoresis in 1.5% agarose and visualized by staining with ethidium bromide. Partial sequencing data of the 355 bp VP1 gene for CAV and the 560 bp VP2 gene for GyV glg1 were analyzed. In conclusion, this study shows the presence of CAV and GyV glg1 in cats with diarrhea in Turkey. This is also the first report of CAV and GyV glg1 in cats with diarrhea in Turkey.

**Keywords:** gyrovirus, chicken anemia virus, domestic cat, molecular detection, Türkiye.

*Oral Presentation*

## **Investigation of 25-OH Vitamin D, Magnesium and Phosphorus Levels in SARS-CoV-2 Patients by Disease Severity**

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### Abstract:

In this study, it was aimed to investigate serum 25-OH Vitamin D, Magnesium and Phosphorus levels of SARS-CoV-2 PCR (+) patients and healthy people. 232 SARS-CoV-2 PCR (+) inpatients and 250 healthy individuals were included in this study. Of these SARS-CoV-2 PCR (+) inpatients, 198 are in the ward, and 34 are in the intensive care unit. The 25-OH Vitamin D and magnesium levels of the two groups with SARS-CoV-2 PCR (+) were found to be lower than the control group ( $p < 0.01$ ). Phosphorus levels of the hospitalized group with SARS-CoV-2 PCR (+) were found to be lower than the control group ( $p < 0.001$ ). In addition, in comparing the two groups with SARS-CoV-2 PCR (+), the magnesium levels of the group hospitalized in the intensive care unit were lower than those hospitalized in the ward ( $p = 0.026$ ), and the phosphorus levels were higher ( $p < 0.001$ ). Also, no significant difference was found between the 25-OH vitamin D levels of the two groups with SARS-CoV-2 PCR (+) ( $p > 0.05$ ). Consequently, vitamin D also affects phosphorus and magnesium metabolism, which may play a critical role in the pathogenesis of SARS-CoV-2. Therefore, we suggest that patients with SARS-CoV-2 should ideally be monitored and treated for phosphorus and Mg deficiencies in the early stages of infection. Phosphorus and Mg supplementation and vitamin D can also be applied as a preventive strategy in at-risk populations.

Keywords: SARS-Cov-2, 25-OH Vitamin D, Magnesium, Phosphorus

## **The Effect of Rabies Immunoglobulin (RIG) Applied to the Anterolateral Thigh on Muscle Functions and Acute Pain Tracking**

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### **Abstract**

Rabies is a zoonotic disease caused by Rhabdovirus, which causes severe damage to the central nervous system. Prophylaxis should be administered in case of bite, scratching or contact of saliva from a rabid animal with mucous membranes or open wounds. Since the incubation period in rabies is variable, it is categorized according to the type of contact and appropriate prophylaxis methods are applied according to WHO recommendations and the Ministry of Health Rabies Prophylaxis Guide. 4 or 5 doses of rabies vaccine, tetanus vaccine and RIG are administered in different protocols depending on the severity of the situation. The wound periphery, M. deltoideus and vastus lateralis part of M. quadriceps femoris are preferred as the application site for RIG. Rabies vaccine, tetanus vaccine, and rabies immunoglobulin (RIG) were administered to the case, who was admitted to the hospital as a stage 3 rabies suspect. The patient, aged 30 years and weighing 70 kg, was injected with 2800 IU (40 IU per kg) rabies immunoglobulin (RIG) from the anterolateral thigh to both vastus lateralis. As a result, muscle strength and VAS (Visual Analog Scale), a pain assessment scale, were measured by two different observers. Knee extension was 2+ on Day 1, 3+ on Day 5, and 5 on Day 9. Knee flexion was 2+ on Day 1, 4 on Day 5, and 5 on Day 9. In addition, the VAS in the case was evaluated as 7 immediately after the RIG application, and the VAS was expressed as 0 from the 9th day of follow-up. It is normal to experience some loss of knee extension after an irritating injection here. However, the vastus lateralis muscle has no role in hip flexion. It is not known exactly whether the hip flexion loss in our case is due to the indirect involvement of the femoral nerve or the continuous fascial (fascia profunda) connection of the muscles with each other. We think that clinical tests and measurements on this subject will be useful.

**Keywords:** rabies immunoglobulin, muscle functions, pain

## Expression of VP4 and VP7 Proteins of Bovine Rotavirus in *Lactobacillus casei*

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### Abstract:

Bovine rotavirus belongs to the genus rotavirus, one of the six genera in the *Sedoreovirinae* subfamily of the *Reoviridae* virus family. Diarrhea caused by rotavirus can even cause death due to severe fluid-electrolyte loss in infected animals and humans. In order to prevent calf diarrhea, in addition to basic measures such as good care and feeding of pregnant cows, improvement of hygiene conditions in delivery rooms and calves' shelters, developing adequate immunity against infectious agents that cause diarrhea. Generally, inactivated mix vaccines including other common diarrheal agents used to struggle against bovine rotavirus. As an alternative to these vaccines, vaccine candidates prepared using probiotic bacteria expressing the structural proteins of the virus produced by recombinant DNA technology have been reported in recent years. Lactic acid bacteria, a probiotic bacteria, can be used as vaccine vectors by using recombinant DNA technology because of low level of harmfulness and ability to express heterologous proteins at a significant level. Coding regions of VP4 and VP7 outer capsid proteins of bovine rotavirus were amplified with RT-PCR by using primers including restriction sites specific to multiple cloning sites of *L.lactis* based constitutive expression plasmid pNZ2103 (MoBiTec, Germany). PCR products were purified and digested with restriction enzymes and then inserted into the corresponding sites of the pNZ2103 expression plasmid. The resulting plasmids pNZ2103-VP4 and pNZ2103-VP7 were transformed into electrocompetent *Lactocacabillus casei* (ATCC 393) by electroporation. Expression levels of the expressed recombinant proteins were confirmed by SDS-PAGE and Western- blot analyzes.

*Lactocacabillus casei* expressing the bovine rotavirus VP4 and VP7 proteins, are planned to be used as vaccine candidates in the future studies and it is aimed to reveal similar vaccine candidates for animal and human infectious diseases with the obtained experience of recombinant DNA technology studies.

**Keywords:** *L. casei*; recombinant protein expression, bovine rotavirus; VP4; VP7

\*This study was summarized from MSc Thesis of corresponding author (EA).

## **Examination of HCV RNA Results And HCV Antigen Test Results of Patients With Low Titer Anti-HCV Positiveness**

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### **Abstract:**

Aim of the study: The aim of this study is to evaluate the sample HCV core antigen (HCV c Ag) test, which is positive for anti-hepatitis C virus (Anti-HCV) at the incoming level of our Samsun Training and Research Hospital Microbiology Laboratory, as an alternative test to the HCV RNA test, HCV Ag test package. Produced from HC RNA test. Between 15.03.2019 and 15.03.2020, HCV RNA test was also performed for anti-HCV S/C values between 1-15 in SBU SEAH ELISA laboratory. HCVc Ag test was performed on 120 of them. It is known that 58 (48.74%) of these 120 sera were female and 61 (51.26%) were male patients and their mean age was 61.24±17.67. Separated from 3 people according to anti HCV. Between 1.00 iu/ml and 5.00 iu/ml of anti HCV 115 samples Group 1; Group 2 with 10 serum samples between 5.00 iu/ml and 10.00 iu/ml; 15 of them 10 and 10.00 iu/ml and above were named as Group 3. While Group 1 HCV RNA and HCV tests were positive, Group 1114 was positive, HCV results were between 5.00 iv/ml and 10.00 iv/ml and HCV RNA test test of 2 was positive, while 93.3% of them were positive for HCV antigens. 93.3% in the HCV test, and those whose Anti HCV results were 10.00 iv/ml and above, 40% of the HCV RNA test of Group 3 was positive, while this rate was the same in the HCV antigens test. Instead of HCV RNA, HCVcAg test is low positive. We can consider an Anti alternative for HCV confirmation. If low level of anti-HCV positivity is confirmed by HCV-RNA tests in the elderly, HCV core antigen test can be used as an alternative test to HCV RNA test. has not been rigorously tested.

Keywords: Anti-HCV, False positivity, HCV RNA, HCV CAg,

The work was supported by the firm Abott.

## Investigation of Lumpy Skin Disease Virus in *Culicoides* spp. in the Aegean Region

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### Abstract:

Lumpy Skin Disease (LSD) is a viral disease in cattle characterized by fever, nodules in the skin, mucous membranes and internal organs, emaciation, enlarged lymph nodes, skin edema and sometimes death. The aim of this study was to investigate the presence of LSD virus in *Culicoides* spp. midges, which detected first time in Turkey in 2013 and also caused major epidemics in the Aegean Region in the following years. Fly traps were set up in different locations of İzmir, Manisa, Muğla, Denizli and Aydın provinces in the Aegean Region between July and October in 2016 and 2017. A total of 954 *Culicoides imicola*, 607 *C. punctuatus*, 437 *C. circumscriptus*, 217 *C. nubeculosus*, 214 *C. newstedti*, 52 *C. obseletus* were identified from the traps. A total of 78 pools were created from midges identified as *Culicoides* and DNA extraction was performed followed by qPCR test was performed to detect LSD virus. As a result of the qPCR test, LSD virus nucleic acid was not detected in any samples. LSD disease first appeared in Turkey in 2013 and spread throughout the country in a short time. Transmission of LSD is thought to be primarily through insects, direct and indirect contact is ineffective or negligible. The main cause of transmission is mechanical via arthropod vectors including mosquitoes (*Culex mirificens* and *Aedes natrionus*, *A. aegypti*) and flies (*Stomoxys calcitrans* and *Biomyia fasciata*), as well as the synanthropic house fly *Musca domestica*, may play a major role. In addition, blood-sucking arthropods such as hard ticks (*Rhipicephalus* and *Amblyomma* spp.) also play a mechanical role in transmission. The LSDV genome in *Culicoides* has been identified in some studies, but one study also suggested that it may be a biological vector. Therefore, more studies are needed to better understand the roles of *Culicoides* in the epidemiology of LSDV. In this study, the presence of LSD virus in six different *Culicoides* species was investigated in the Aegean Region, which was endemic in study time, and all samples were found to be negative. In a conclusion, no evaluation could not made regarding its potential as a biological vector.

Keywords: Aegean Region, cattle, *Culicoides*, Lumpy Skin Disease virus.

## **Bioinformatics Analysis to Identify and Evaluate the Critical Driver Genes and Pathways Involved in COVID-19**

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### **Abstract:**

The novel coronavirus (COVID-19) outbreak was declared as a global pandemic by The World Health Organization (WHO) on March 11, 2020. Since then, a large number of omics data has been generated from different experimental and clinical studies. Due to the complex nature of the disease, the clinical use of existing data against COVID-19 remains insufficient. The present study aims to identify critical genes and associated main pathways using a bioinformatics approach to elucidate the gene-disease relationship. For this purpose, disease-related genes were identified using the Comparative Toxicogenomics Database (CTD). The first 100 genes ranked by inference score were used for further analyses. The protein-protein interaction (PPI) network of the identified genes was mapped by the STRING database. Thereafter, the MCODE plug-in of Cytoscape software was used to identify significant clusters in the PPI network. Finally, the most critical hub gene candidates were determined based on the Maximal Clique Centrality (MCC) algorithm scores of Cytohubba plug-in of Cytoscape. The ToppGene (ToppFun) tool was used to identify functional categories and biochemical pathways. In total, ten genes (*TNF*, *IL4*, *CXCL8*, *IL6*, *CCL2*, *STAT3*, *JUN*, *IL1B*, *IL10*, and *ICAM1*) were identified as highly critical hub genes for the disease. The findings of the current study support the hypothesis that core genes involved in important mechanisms such as the TNF signaling pathway, Jak-STAT signaling pathway, and FoxO signaling pathway may be crucial targets for understanding and managing COVID-19-related complications.

**Keywords:** bioinformatics, COVID-19, hub genes, network analysis.

## **Investigation of Bovine Coronavirus Infection in Afyonkarahisar Province in the inner Aegean Region of Turkey**

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### **Abstract:**

Bovine coronavirus (BCoV) is a viral agent affecting the productivities of dairy industry worldwide. BCoV causes respiratory and enteric infections in cattle and other ruminants. The infection leads to severe diarrhea, particularly in dairy calves, generally during the winter season. Livelihood is based on agriculture and animal husbandry in Afyonkarahisar Province. This province, which ranks first in the inner Aegean Region (Afyonkarahisar, Kütahya, Uşak) with approximately 430.259 cattle, constitutes approximately 58.4% of the number of dairy cattle in the region and takes an important position in terms of livestock potential with its large pastures and arable land where a significant amount of forage crops can be cultivated. The aim of the present study was to investigate the role of BCoV in calves with diarrhea in Afyonkarahisar province in the inner Aegean region of Turkey. To this end, a total of 83 fecal samples of calves with diarrhea younger than 3-4 months of age Afyonkarahisar province in 2017-2019 were tested. Fecal samples were screened for BCoV antigen detection by commercial ELISA kit (BioX Diagnostics -BIO K 314-Belgium). BCoV antigen were detected 10.84% (9/83) of fecal samples. As a result, it shows the presence of BCoV infection in calf deaths in Afyonkarahisar province. Also, it is known that dairy industry in the region are generally family-run farms and the vaccination of BCoV is generally no vaccination. BCoV vaccines to be produced from local strains can reduce possible calf mortality. In this way, it may be needed to decrease the economic losses due to BCoV infection in dairy cattle.

**Keywords:** Bovine coronavirus, calf diarrhea, ELISA, Afyonkarahisar

*Oral Presentation*

## **Investigation of Newborn Calf Diarrhea Causing Pathogen Distribution in the Emergency Unit of Animal Hospital**

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### **Abstract:**

Gastrointestinal infections (GI) of newborn calves often result in clinical symptoms such as diarrhea, and newborn dies if the infection is severe. Viruses, bacteria or parasite most commonly cause GI infection in calves, but their distribution in severe clinical cases admitted to emergency unit of the animal hospital was not well known. In this study, pathogen distribution was studied for one year in fecal samples of calves (<45 days old) admitted to the intensive care unit (ICU) of animal hospital. Collected fecal samples were subjected to pathogen specific PCR screening panel including bovine rotavirus (BRV), bovine coronavirus (BCoV), Cryptosporidium spp. and E.coli (ETEC K99+). PCR identification results were revealed that Cryptosporidium spp. (61.5%) were commonly identified followed by rotavirus (56.4%) among the collected fecal samples regardless of age and seasonal fashion. The prevalence of Coronavirus (19.2%) and E.coli K99+ (15.4%) were also detected in severe newborn calves in the ICU. We also showed that most severe cases observed in the newborns age less than 6 days old (44.9%) during winter season (44.9%) followed by spring (33.3%). Pathogen identification was also confirmed by performing agent isolation studies in samples that PCR confirmed. This study shows the pathogen distribution in severe newborn calves in the ICU by seasonal and age-related mode for the first time. Results taken from this study can contribute to controlling and eliminating newborn calve losses due to GI infection.

**Keywords:** Cryptosporidium spp.; coronavirus; E. coli ETEC K99+; rotavirus; newborn calf diarrhea

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## **Comparison of different virus sampling technics in a Bovine Coronavirus model**

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### **Abstract:**

The recent pandemic and the attention of researches on the effects of synthetic or natural products on protection or control of diseases, have increased investigations of the antiviral effects of various compounds. But pre-analytical conditions like choosing sampling area, material to be used, storage conditions or mediums can affect the performance of a laboratory analyses. The aim of this study was to compare 14 different sampling techniques to determine the sampling model suitable for antiviral efficacy trials in ain Bovine Coronavirus (BCoV) model. We compared collection methods of; aspirating whole drop / small droplets of virus suspensions or wetted smeared dry virus contaminated area, swab sampling of smeared virus contaminated dry area or virus droplets by using pre-wetted or dry rayon swab material, recovering virus particles from cellulose filter paper. We also compared BCoV titers at 2nd and 12th hours after inicial of incubation at room temperature for each condition. The highest virus titers were obtained by aspiration of 0.2, 2 and 5ml virus suspensions with same virus concentrations. Recoveredvirus titers reached 75%, 71% and 71%, respectively compared to the control virus titer value at second hour. Lowest values determined in the swab sampling by pre-wetting (44-52%). After the virus containing speciemens was kept at room temperature for 12 hours, the highest titers (compared to the virus control titers) were obtained in the virus particles housed in 5 ml liquid (83%) and the lowest titers were obtained in swab sampling of the virus particles leaved in a dry environment (25%). According to the results obtained in this study, it is evaluated that the preference of the aspiration method will contribute to obtaining the maximum virus titer in the studies to be conducted.

**Keywords:** aspiration, bovine coronavirus, cellulose filter paper sampling methods, swab, virus titration.

## **The Effect of the COVID-19 Pandemic of the Professional Image Perception of Nurses**

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### **Abstract:**

The study was conducted to determine the effect of the COVID-19 pandemic on nurses' perception of professional image and to determine the factors affecting it. 717 nurses participated in the descriptive, cross-sectional and correlational study. The data of the study were collected by using the "Descriptive Information Form" and the "Scale for the Image of Nursing Profession". Data were evaluated using descriptive statistics and Kruskal Wallis-H test and logistic regression analysis at 95% confidence interval. The mean age of the nurses is  $29.29 \pm 6.78$ . 38.8% of the nurses stated that they were not satisfied with working in this period, 37.5% did not feel special because they were nurses during this period, 56.6% did not feel the moral support of the society and 32.4% wanted to resign. During this period, 35.3% of the nurses stated that their perception of professional image changed positively, and 33.9% in the negative direction. The mean score of nurses from the Scale for the Image of Nursing Profession was determined as  $142.24 \pm 8.77$ , and it was determined that image perceptions were affected by many factors. The research reveals that the COVID-19 pandemic affects nurses' perception of professional image positively at a moderate level and that nurses' perception of professional image is affected by some factors in this period. In this context, it is recommended to plan and develop institutional and legal initiatives by policy makers.

**Keywords:** perception, covid-19, nurse, professional image, pandemic.

## **The Relationship between COVID-19 Awareness and Vaccine Hesitancy among University Students**

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### **Abstract:**

The following research was conducted in an effort to determine the relationship between COVID-19 awareness and vaccination hesitancy among university students. Data was collected from 700 university students between October 2021 and January 2022 through the snowball sampling method for the purpose of this descriptive and cross-sectional study. A specifications form, COVID-19 Awareness Scale and Vaccine Hesitancy Scale in Pandemics were all utilized for the collection of necessary data. Number, mean, percentile distributions, standard deviation, One-Way ANOVA, Mann Whitney U test, independent t-test, Pearson correlation analysis were used to evaluate the data. University students achieved  $89.24 \pm 16.25$  points on the COVID-19 awareness scale and  $23.32 \pm 9.61$  points on the Vaccine Hesitancy Scale in Pandemics. The scales mean scores differed according to the descriptive characteristics of the students ( $p < 0.05$ ). A moderately negative correlational relationship was found between the total mean score of the COVID-19 Awareness Scale and the Vaccine Hesitancy Scale in Pandemics total score ( $r = -0.496$ ,  $p = 0.00$ ). University students' awareness of COVID-19 was very high and hesitations about vaccination were below the average. The results of this study determined that as student awareness of COVID-19 increases, hesitations about vaccination decrease. For this reason, it is necessary to organize educational activities that contain reliable information about COVID-19 for students.

**Keywords:** awareness of COVID-19, vaccine in pandemic, university student

## **The Effect of Mothers' Care Burden on the Parent Child Relationship During the Covid-19 Pandemic Process**

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### **Abstract:**

Being exposed to various disasters such as war, migration, and pandemic can increase the burden of caregivers on parents, affect parental behaviors, and endanger the parent-child relationship. The research was carried out to determine the effect of the care burden of mothers on the parent-child relationship during the COVID-19 pandemic process. This descriptive and relationship-seeking study was conducted between May-June 2021 with 229 mothers residing in Erzincan and having children between the ages of 6-18. The questionnaire link, which includes the Burden Scale for Family Caregivers and the Parent-Child Relationship Scale, was created by the researchers through Google forms. The Google form link was sent to mothers via social media (facebook, instagram, whatsapp, etc.) tools. Using the snowball method, mothers were asked to share the survey link with other mothers around them. Filling the questionnaire took an average of 10-15 minutes. Mothers with children between the ages of 6-18, who had internet access, were literate enough to participate and access the online survey, and volunteered to participate in the research were included in the study. Percentage, means and Pearson correlation analysis were used in the evaluation of the data. The mean age of the mothers participating in the study was  $37.45 \pm 6.57$ , 59.4% were housewives, 39.3% had less than their income, 72.1% lived in the city center, 45% had two children and 68.1% adapted to the pandemic. Mothers' Care Burden Scale mean score ( $12.44 \pm 8.70$ ) and Parent Child Relationship Scale mean score ( $40.88 \pm 10.24$ ) were moderate. It was found that there was a positive and weak ( $0.20 \leq r \leq 0.40$ ) relationship ( $r=0.229$ ;  $p<0.05$ ) between the care burden of mothers and the parent-child relationship. As a result of the research, it was found that as the care burden of mothers increased, the parent-child relationship deteriorated.

**Keywords:** Care burden, nursing, parent-child relationship.

## **Hepatitis A virus detection in shellfish by Real time reverse transcription PCR from comparative three Moroccan lagoons**

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### **Abstract:**

We aimed at evaluating the contamination by hepatitis A virus (HAV) of 156 shellfish samples collected from three Moroccan lagoons: Dakhla (class A), Oualidia (class B) and Moulay Bousselham (class C) in Morocco. inter-lagoon comparative study of HAV contamination of harvesting areas and assessing correlations between viral contamination and precipitation. Fifty two shellfish samples were collected monthly between March 2018 to March 2018 from each of the three lagoons corresponding to oysters from different farms in the Oualidia and Dakhla lagoons and wild mussels in Moulay Bousselham lagoon. Detection of hepatitis A virus, was carried out by real-time reverse transcription polymerase chain reaction (rRT-PCR) according to ISO 15216-2 method. The HAV genome was detected in 12 (7.69%) of 156 samples: 8 mussels (*Mytillus galloprovincialis*) and 4 oyster (*Crossostea gigas*). Eight positive samples (8/52) were collected from Moulay Bousselham (class C) area, and 4 positive samples (4/52) were collected from Oualidia (class B) and None of the samples revealed the presence of VHA in Dakhla (class A). the analysis of the results showed that the highest rate of HAV contamination was recorded in the Moulay Bouslham lagoon (15,38%) while this rate does not exceed 8% in the Oualidia lagoon although no positive sample was recorded in Dakhla lagoon. Our results suggest significant presence of HAV in bivalvemolluscs from Oualidia (classe B) and Moulay Bousselham (classe C) lagoons. Viral surveillance of bivalve molluscs is therefore necessary before their delivery for human consumption. Considering the health benefits of shellfish consumption, improving wastewater quality will make an important contribution to enhancing the safety of shellfish and international food security.

Key words: Hepatitis A virüs, shellfish, Real time PCR

*Oral Presentation*

## **Detection of Hepatitis A and Hepatitis E Viruses in Mussels from Oued Cherrat Estuary in Morocco**

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### **Abstract:**

The present study aims to evaluate Hepatitis A Virus (HAV) and Hepatitis E Virus (HEV) contamination in mussels (*Mytilus galloprovincialis*) from Oued Cherrat estuary, located on the Moroccan Atlantic coast in the province of Benslimane (Casa-Settat region). A total of 52 mussel samples, naturally growing, were collected monthly between March 2019 and March 2020 from four sites located on both sides of the estuary. Detection of Hepatitis A Virus and Hepatitis E Viruses was carried out by real-time reverse transcriptase polymerase chain reaction (RT-PCR) according to ISO/TS 15216 method ((Microbiology of the food chain-Horizontal method for determination of HAV using real-time RT-PCR -Part 1: Method for quantification). HAV RNA was detected in 46.15% of samples analyzed and, none with HEV. Moreover, the prevalence of HAV was significantly associated with seasonal variation. This qualitative study on HAV and HEV contamination highlights the interest of studying mussel samples from wild area. The presence of HAV in mussels represents a potential health risk. Therefore, viral contamination surveillance of mussels is necessary to protect consumers. Significance and Impact of the study: HAV contaminated shellfish can play a role as reservoirs and/or vehicles in faecal-oral transmission in this area, and further monitoring of such a contamination is required.

**Keywords:** Hepatitis A Virus, Hepatitis E Virus, mussels (*Mytilus galloprovincialis*), RT-PCR, Oued Cherrat estuary.

## **Examination of Women Healthcare Professionals' Work-Family Life Balance and Burnout within the Covid-19 Period**

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### **Abstract:**

The COVID-19 pandemic has created an unprecedented threat and significant challenges for healthcare workers. Especially in terms of female health workers, it has caused problems related to work and family life to deepen. During the COVID-19 pandemic, female healthcare workers have become the greatest force in the fight against the epidemic. The aim of the study was to examine women healthcare professionals' work-family life balance and burnout levels during the COVID-19 pandemic process. The cross-sectional descriptive study was conducted with women healthcare professionals between 17-27 October 2020. In the study, "snowball sampling", one of the nonprobability sampling techniques, was used. Data collection forms prepared with the Google Docs program were sent to women healthcare professionals in Turkey via e-mail or WhatsApp, and they were asked to fill out the forms and share them with those around them. Data were collected using the "Participant Information Sheet", "Work-Family Life Balance Scale", and "Maslach Burnout Inventory (MBI)". In the study, of the women healthcare professionals; the Work-Family Life Balance Scale (WFLBS) mean score was  $3.14 \pm 0.66$ ; "Negative Impacts of Work on Family" subscale mean score was  $3.75 \pm 1.19$ ; "Negative Impacts of Family on Work" subscale mean score was  $3.91 \pm 0.78$  and "Work-Family Accordance" subscale mean score was  $3.91 \pm 0.78$ . The mean score of the Maslach Burnout Inventory (MBI) was found as  $46.19 \pm 13.51$ ; while  $19.80 \pm 8.57$  for "Emotional Exhaustion",  $6.72 \pm 4.90$  for "Depersonalization", and  $19.66 \pm 5.39$  for "Personal Accomplishment" subscales. We concluded that the work-family life balance of women healthcare professionals was disturbed and family had more negative impacts on work. We determined that the burnout of women healthcare professionals was at high levels.

**Key Words:** Burnout, COVID-19 pandemic, Women healthcare professionals, Work-Family Life Balance

## **Investigation of Gastrointestinal Helminths in Cattle in Ağrı Center and Its Districts**

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### **Abstract:**

This study was carried out to determine the prevalence of gastrointestinal helminths in cattle in Ağrı center and its districts. Approximately 30-50 gr of stool samples were taken from the rectum of each cattle belonging to the family businesses and placed in stool containers in different settlements in Ağrı center and Patnos, Doğubeyazıt, Diyadin, Eleşkirt, Taşlıçay, Tutak and Hamur districts, were brought to Van Yüzüncü Yıl University Faculty of Medicine Department of Parasitology Research Laboratory. After the stool samples were dissolved in tap water, they were filtered with the help of a plastic tea strainer. The resulting filtrate was placed in centrifuge tubes and centrifuged at 1800 rpm for three minutes. The supernatant collected at the top of the tubes was removed, leaving 2-5 ml of liquid at the bottom of the tubes. Preparations were prepared from the remaining liquid and examined under a light microscope. Helminth eggs were found in 120 (52.2%) of 230 cattle whose stool samples were examined, and more than one helminth species was detected in 36 (15.7%) of these cattle. In the study, *Trichostrongylus* spp. in 51 (22.8%) samples, *Toxocara vitulorum* in 25 (10.1%), *Fasciola hepatica* in 19 (8.3%), *Ostertagia* spp. in 11 (4.8%), *Trichuris* spp. in eight (3.5%) and *Dicrocoelium dendriticum* was found in five (2.2%) samples. A high rate of gastrointestinal helminths was found in cattle in Ağrı and its districts. These parasites, which cause significant decrease in productivity and even death in cattle, are of great importance, and it is extremely important to periodically control the animals for intestinal parasites and to treat parasitized animals, especially in Ağrı province where pasture livestock is common.

**Keywords:** Ağrı, Cattle, Gastrointestinal Helminths

*Oral Presentation*

## **Grass snakes (*Natrix natrix*) as a reservoir of *Alaria alata* and other parasites, as a potential danger for human health**

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### **Abstract:**

The aim of the study was to investigate the occurrence of *Alaria alata* (Goeze, 1782) in fifty-one grass snakes (*Natrix natrix*) collected in Gostynińsko-Włocławski Landscape Park in Poland in 2018-2019. Each snake was tested for the presence of *A. alata* mesocercariae using AMT and MSM methods. 18S ribosomal RNA (18S rRNA), cytochrome C oxidase subunit I (COI) and 28S rRNA genes were amplified by PCR and sequenced for the species identification. Fifty (98%) grass snakes were infected with helminths. The molecular characterization of trematodes allowed us to identify *A. alata* in 30 snakes (58.8%), *Conodiplostomum spathula* (Dubois, 1937) in 16 snakes (31.3%), *Strigea falconis* (Szidat, 1928) in 12 snakes (23.5%), and *Neodiplostomum attenuatum* (Linstow, 1906) in two snakes (3.9%), while in four snakes (7.8%), the trematode species could not be identified. Based on the analysis of 18S and COI sequences, *Crenosoma vulpis* (Dujardin, 1845) was identified in four snakes (7.8%), while nematodes collected from three snakes remained unidentified. The tapeworm sample was identified as *Ophiotaenia*. The obtained results indicate that grass snakes are an excellent vector of *A. alata* and may be a potential source of infection for mammals, e.g., wild boars and foxes, which results in an increased risk of alariosis for raw or undercooked game meat consumers. The occurrence of the other trematodes, nematodes and cestodes present in grass snakes indicates the role of this free-living animal as a huge reservoir for all these parasites. It should be bear in mind, especially when zoonotic parasites are discovered, posing a risk to human health.

**Keywords:** grass snakes; parasites; trematodes; *Alaria alata*; environmental risk

## **Investigation of Intestinal Parasites in Hypertension Patients**

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### **Abstract:**

The effects of intestinal parasites on the host depend on different factors, such as the number of parasites, whether the parasite is invasive or not, and the condition of the patients' immune system. These effects become more severe when it was accompanied by chronic diseases such as hypertension. This study was conducted to investigate the frequency of intestinal parasites in patients with hypertension. Thirty hypertension patients, aged between 18 and 80 years, who applied to the Van Yüzüncü Yıl University Dursun Odabaş Medical Center, between September and October 2021, were included in the study. The control group consisted of 30 immunocompetent individuals without any chronic disease. Stool samples collected from the individuals included in the study were first analyzed macroscopically, and then using native-Lugol and concentration methods. One or more intestinal parasites were detected in 10 (33.33%) of the 30 patients in the patient group. Parasites were detected in 1 (3.33%) of the 30 individuals in the control group. A statistically significant difference was found between the frequency of parasites in the hypertension patients and the control group. Therefore, it was concluded that it is necessary to evaluate hypertension patients in terms of intestinal parasites.

**Keywords:** hypertension, parasite, Turkey

## **Molecular Confirmation of *Taenia pisiformis* Cysticercosis in Rabbit in Poland**

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### Abstract:

The aim of this study was to provide molecular characterization, together with phylogenetic analysis, of *Taenia pisiformis* cysts isolated from rabbit. Autopsy revealed numerous cysts on the surface of the liver, within the liver parenchyma, and in the fluid of the body cavity. On the basis of morphological features and molecular analysis, the cysticerci were identified as *T. pisiformis* metacestodes. PCR was performed with three different protocols to obtain partial sequences of 12S ribosomal RNA (12S rRNA), NADH dehydrogenase subunit 1 (nad1), and cytochrome oxidase subunit 1 (cox1) of *Taenia* spp. The products from the PCRs were sequenced. Interpretation of the sequencing results of the obtained amplicons, by comparing them with the GenBank database, proved that the causative agent, in this case, was *T. pisiformis*. The phylogenetic analysis of the received sequences identified a new haplotype. The received data can be used to supplement the species description. To our knowledge, this is the first molecular confirmation of *T. pisiformis* metacestodes infection in the intermediate host - rabbit, in Poland. The range of this infection among lagomorphs in Poland is still unknown, and further investigation is required. Our results provide useful knowledge for monitoring changes in parasite populations for future control strategies.

Keywords: *Taenia pisiformis*; rabbit; PCR; Poland.

<sup>#</sup>This research was funded by the statutory funds of the National Veterinary Research Institute in Puławy, Poland.

## **Rapid Detection of Fasciolosis in Large Ruminants of Pakistan**

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### **Abstract:**

Fasciolosis is caused by two liver fluke species namely *Fasciola hepatica* and *Fasciola gigantica*, are well recognized because of its high veterinary impact. Stool examination for *Fasciola* eggs during prepatent period is not possible, limited efforts towards a reliable and early detection methods are available. The present study aimed to develop early diagnostic ELISA test against fasciolosis. The excretory/secretory (ES) and somatic (SA) products of *Fasciola* helminths were analyzed and immunogenicity was evaluated by immunoblotting and seroprevalence was determined by indirect ELISA. The immunoblotting results showed the most prominent bands against ES antibodies were 25, 35, 55-70, 100 and 250 kDa and SA antigens showed 10, 15-25, 35, 70, 100 and 250 kDa polypeptide bands. The sensitivity and specificity of developed indirect ELISA for SA antigens was 95.45% and 87.1%, while for ES antigens was 100% and 77.42% respectively. The overall seroprevalence recorded for fascioliasis based on SA antigen was 39.8% and 29.8% for ES antigen. The fasciolosis did not show significant association with host type, sex and age groups of examined animals, however significantly higher infection was found in months of September and October. The result provides sensitive in house immunodetection assay for diagnosis of fasciolosis alternative to commercial kits with high import cost.

**Key words:** Fasciolosis; Indirect ELISA; Somatic and excretory secretory antigen; Immunoblotting; Pakistan

#The research work presented here is under funding provided by Higher Education Commission of Pakistan under the project grant No:7402/Federal/NRPU/R& D/HEC/2017.

## ***In-ovo* Antiviral Activity of *Centella asiatica* (L.) Leaves Against Avian Influenza Virus H9N2**

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### Abstract

The occurrence of avian influenza virus H9N2, an RNA virus of orthomyxoviridae family, is more pervasive than past reported cases. The presented study evaluated the antiviral activity of *Centella asiatica* (L.) ethanol extract (CAE) and *Centella asiatica* (L.) aqueous extract (CAA) against avian influenza virus H9N2. Following the extraction of CAE and CAA, the phytochemical screening of both extracts was performed. The three 2-fold dilutions (2.5mg/ml, 1.25mg/ml and 0.625mg/ml) of each extract were prepared. Embryonated chicken eggs were inoculated with a respective dilution / solution and incubated. The HA test for each group was performed on the harvested amniotic fluid of eggs and compared with control and standard (ribavirin) groups. All concentrations of both extracts of *Centella asiatica* (L.) significantly reduced the virus titer (difference was considered significant at  $p < 0.05$ ). The 2.5mg/ml concentration of CAE and CAA has shown a maximum reduction ( $8.00 \pm 0.00$  and  $7.80 \pm 0.45$ ). These results suggest that *Centella asiatica* (L.) possess strong antiviral activity against avian influenza virus H9N2. However, further investigations are needed to evaluate the pharmacokinetics and toxicology of this plant in order to develop a proper formulation.

Keywords: antiviral activity, avian influenza virus H9N2, *Centella asiatica* (L.), ribavirin, embryonated chicken eggs

Oral Presentation

## Distribution and Identification of The Parasitic Nematode *Contracaecum* sp. In *Planiliza abu* (Heckel, 1843) (Mugiliformes, Mugilidae) From Razzaza Lake, Karbala Province, Iraq

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### Abstract:

The Anisakidae family's most important genus, *Contracaecum*, contains nematodes with a broad variety of host species participating in their life cycles, a large number of species, and a considerable negative influence on humans' health. *Planiliza abu* specimens from the local market in Karbala, Iraq, were examined for the presence of *Contracaecum* spp. in the abdominal intestinal cavity. A survey on nematode parasites of *Planiliza abu* of Razzaza Lake was done throughout a three-year period, from November 2019 to December 2021. A total of 148 fish were collected and tested for nematode infection in 2019, 277 in 2020, and 577 in 2021. The infection rate in November and December of 2019 was 48.73%, 65.08% in 2020, and 9.6% in 2021, respectively. Light microscopic examination revealed larval type *Contracaecum* in all fish. Baghdad University's Iraq Natural History Research Center and Museum confirmed the parasite as *Contracaecum* spp. Only *Contracaecum* spp. L3 larvae were found in *Planiliza abu*. Infection rates were greatest in January and February and lowest in July and August, 2021. When it came to third-stage larvae, female fish (N=25) had a higher infection rate than male fish (N=8), with a total of 40 and 18, respectively. This study indicated that industrial pollution, human activity, and seasonal patterns all had an influence on infection rates. The molecular diagnosis of *Contracaecum* spp. in different hosts and at any stage of development is very important for studying their population ecology and biology, their systematics, and how to control the diseases that they cause. This should be looked into in future studies.

Keywords: *contracaecum* spp.; *planiliza abu*; razzaza lake, Iraq; light microscopic examination.

## Molecular Characterization of *Toxoplasma gondii* and its Zoonotic Potential for Public Health Significance

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### Abstract:

Toxoplasmosis is a disease of warm-blooded animals with a global distribution, caused by an opportunistic parasite *Toxoplasma gondii* (*T. gondii*). The aim of present study was to explore the zoonotic potential of *T. gondii* in food animals and humans. Blood samples (n=1000) were collected from sheep and goats each. However, Human blood samples (n= 200) along with 200 fecal samples from cats were also collected from selected districts of South Punjab, Pakistan. Seroprevalence was determined by commercial indirect IgG ELISA (Enzyme-Linked Immunoassay) kits. Samples were processed by PCR (Polymerase Chain Reaction) using specific primers and confirmed by sequencing and phylogenetic analysis. Obtained oligonucleotide sequence (*T. gondii*) was submitted to the GenBank® data base and evolutionary tree was constructed using MEGA-X (Molecular Evolutionary Genetics Analysis) software. In Khanewal, A total of 292 goats (29.2%), 265 sheep (26.5%) and 6 cats (3%) out of 200 fecal samples were found positive. Out of 200 human blood samples, 52 were found positive with seroprevalence of 26%. In Sahiwal district, 49 human samples, 235 sheep, and 348 goat samples were found positive with seroprevalence of 24.5%, 23.5% and 34.8% respectively while 7 fecal samples (3.5%) of cat were found positive. Five out of 13 positive fecal samples (38.46%) of *T. gondii* were confirmed through PCR. Phylogenetic analysis revealed 98% to 100% homology with *T. gondii* SAG2 (Surface antigen 2) atypical strain. Data obtained were found statistically significant ( $P \leq 0.05$ ) using Chi-square test ( $\chi^2$ ). The present study revealed the zoonotic potential of toxoplasmosis. However, infected females in certain positive cases have interaction with infected cat or sheep/goats, reflected a vastly endemic threat to small ruminants and humans with a key role of cats in transmission of the disease.

Keywords: Toxoplasmosis, Phylogenetic analysis, Zoonotic potential, Public health significance

This study was supported by Higher Education Commission (HEC) Pakistan under National Research Program for Universities (NRPU).

*Oral Presentation*

## **Trichinellosis Outbreak in Poland After Consumption of Sausage Made of Wild Boar Meat**

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### **Abstract:**

The aim of this study is to present information about an outbreak of trichinellosis due to the consumption of sausage made from wild boar meat unexamined for the presence of *Trichinella* spp. which was reported in Poland in December 2020. The epidemiological investigation was performed by the Sanitary Inspection Services in cooperation with the Veterinary Inspection. Since the origin of meat was unclear, the samples of sausages were analyzed for animal species identification by isoelectric focusing on polyacrylamide gels in gradient pH. The detection of *Trichinella* spp larvae was performed with the use of magnetic stirrer-assisted digestion method. Examination of the sausages confirmed that they were made of wild boar meat. The detected level of *Trichinella* spp. larvae per gram was >30 lpg and therefore the threat of an infection in humans after consumption of such product was significant. The outbreak affected eight people who suffered from the symptoms including fever, muscle pain and swelling of eyelids. Some individuals also had abdominal pain or diarrhea. According to Polish regulation, all animals intended for human consumption (including own purposes) should be examined for the presence of *Trichinella* spp. However, epidemiological reports indicate that despite of these regulations, uninspected meat is still incidentally used for own purposes. Mainly hunters, along with their family and friends, are those at risk of acquiring trichinellosis after consumption of wild boar meat, especially if the meat has not undergone a proper heat treatment. Over the years, the main source of trichinellosis in Poland has been wild boar meat, and the majority of trichinellosis cases were related to the consumption of traditional raw meat products such as Polish sausage. Taking this into account, there is the need for better education of consumers in the *Trichinella* spp. endemic regions and among cultures consuming traditional raw meat products.

**Keywords:** *Trichinella* spp., trichinellosis, wild boar, sausage, outbreak

## ***Eimeria* Infections in Partridges (*Alectoris chukar*)**

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### Abstract:

Partridges belong to the family *Phasianidae* in the order *Galliformes*. *Alectoris chukar*, also known as Indian partridge, is Turkey's most widespread partridge species due to its natural habitat being rocky and steep lands and choosing regions that do not receive much precipitation. In farms where partridges and birds of prey are raised, the prevalence of parasitic diseases may increase and be overlooked due to the fact that many animals are housed in the same cage or shelter. *Coccidiosis* is a parasitic disease caused by a protozoan of the genus *Eimeria* and *Isospora* belonging to the phylum Apicomplexa. The agents have a direct life cycle and settle in the intestinal tract of many mammalian and bird species. They cause severe disease and often death, especially in young animals. However, there is not much literature on the species seen in wildfowl in Turkey. In this study, the digestive system of 20 partridges sent to Ondokuz Mayıs University Veterinary Faculty Parasitology Department laboratory by hunters was examined for *Eimeria* infection. The guts of the partridges were opened, were inspected with naked eyes macroscopically, and a sufficient amount of faeces was taken. Stool samples were analyzed by flotation method, and oocyst count was performed in gram stool by McMaster methods. As a result of the study, *Eimeria* spp. oocyst was detected. The overall infection rate was 35% (7/20). The number of oocysts in one gram stool (opg) was determined as 100, 100, 300, 1200, 1800, 5400 and 5500. For one week, the infected stool samples were sporulated in 2,5% potassium dichromate solution in a 25-27°C incubator. For species identification, the sporulated oocysts were examined in shape, size, oocyst residue, Stieda body, polar granules, micropillars, cap and broken globules, and other morphological features. As a result of the study, *Eimeria kofoidi* and *Eimeria tenella* species, which were previously encountered in Turkey, were determined in partridges.

Keywords: *eimeria*, partridges, coccidiosis

## **Synovial Hemangioma of the Stifle Joint in A Kangal Dog**

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### **Abstract:**

Synovial hemangioma is one of the rare benign neoplasms in humans and animals. It can be found on any synovial membrane-lined surface, along tendon sheaths, or in joint spaces. It is observed in humans and animals, especially in the knee joints. These tumors have vascular channels lined by endothelial cells without features of malignancy. The material of this case was a mass located in the left knee joint of a 10-year-old intact male Kangal dog. The dog was taken to a private veterinary clinic with a complaint of lameness on his left hind leg for five months. It was reported that there was pain resulting from manipulation of the stifle joint and that there were no extension and flexion movements. On gross examination, the mass was 1,2x0,8x1 cm in size. It was dark brown-red color and medium-hard. Hematoxylin-eosin and immunohistochemical staining methods were used for histopathological evaluation. Significant proliferation was observed in synoviocytes in histopathological examination. Vascular channels filled with erythrocytes and lined with well-differentiated endothelial cells of similar size and shape were detected. On immunohistochemical examination, mild CD31 expression was observed in endothelial cells of vascular channels. In addition, actin expression was detected in smooth muscle cells of blood vessels. Additionally tumor cells, vimentin expression was observed in the stromal connective tissue around blood vessels. Based on these findings, the mass was diagnosed as synovial hemangioma. Synovial hemangioma, which is rarely observed in animals, is reported with this case report.

**Keywords:** Synovial hemangioma, stifle joint, Kangal dog

## **Pros and Cons of Distance Education in Teaching History of Veterinary Medicine**

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### **Abstract:**

Distance education is an active learning method in which students and teachers are not physically in the same environment. This study aims to present the pros and cons of the veterinary history courses, which are conducted through distance learning in 2021-2022 academic year. Courses were held online for 1 hour a week for 14 weeks. Although the instant participation of the students in the course was considered as high, asking questions and interaction in the lessons were limited almost to a few students. None of the students used microphones and cameras during the lessons. In the lessons, questions or the answers given were shared via chatbox and as short answers. No questions or feedback was conveyed to the lecturer, either verbally or in writing, outside of the lesson period. The lecturer did not see the faces of any students and did not have the opportunity to meet any of them face to face until the exam. This situation negatively affected the motivation of the lecturer. The biggest cons of this method is the inability to establish effective communication and mutual interaction. On the other hand, the fact that the course is being recorded, the students do not have to take notes during the lesson, all the students can observe the lecturer's screen, all the resources can be accessed via search engines in lectures are considered as the pros of this education. The fact that the lecturer is not physically present in the classroom and can enter the lesson instantly from anywhere with her own computer is considered as a positive feature. Similarly, the biggest pro of this method is that students have the flexibility to study whenever, wherever and as much as they want. It can also be seen as an advantage that students who shy away from asking questions in front of the community have the chance to communicate with the lecturer in writing. In conclusion, veterinary history course found to be compatible with the distance learning method. As a consequence, it can be said that this method has many advantages and disadvantages for both students and the lecturer.

**Keywords:** distance education, history of veterinary medicine, veterinary training

## **The Effect of Using Different Litter Materials in Broiler Breeding on Performance, Carcass Yield, Antioxidant Status, Some Litter Parameters and Coccidiosis Oocysts**

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### **Abstract:**

In this study, the effects of litter materials containing separately and equal amounts mixtures straw and wood dust on performance, carcass yield, antioxidant status, litter moisture and ammonia levels, presence of Coccidiosis oocyst in broilers breeding were investigated. The study was organized in three main groups as wood dust, ground straw and mix (50% wood dust + 50% ground straw) and each group included four subgroups. For this purpose, 120 0-day old Ross 308 broilers were used. The chicks were distributed as 10 chicks in each subgroup and a total of 40 chicks in each group. At the end of the study, when the whole study period was taken into account, it was determined that the body weight gains of the groups were similar at the overall period ( $p>0.05$ ). There was no difference between the feed consumption and carcass yields of the groups ( $p>0.05$ ). It was determined that feed conversion ratio increased significantly in the ground straw group in the second half of the study compared to the other groups ( $p<0.05$ ). It was observed that nitric oxide level was higher in the mixture group, whereas enzymatic antioxidants was more effective in the wood dust group ( $p<0.05$ ). Ammonia and water retention levels of the litters were similar between the groups ( $p>0.05$ ). Coccidiosis oocysts were examined in daily litter samples from groups, but not observed in any of them. As a result, it has been determined that the use of wood dust and straw separately or in equal proportions as a litter will similarly effect on performance, but wood dust will positively affect the antioxidant status.

**Key words:** broiler, litter, performance, antioxidant, coccidiosis

## Genetic Analysis of *BMP4*, *GLI2* and *SHH* genes in sheep and goat affected with atresia ani with candidate gene approach

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### Abstract

Atresia ani is a congenital defect that fails the separation of the anal membrane to form an anal orifice. It is reported in all animals including sheep and goat. The exact etiology of atresia ani is unknown, but variations in many genes are a major contributing factor. This study was conducted to identify genetic variants in *BMP4*, *GLI2* and *SHH* genes in sheep and goat. A blood sample of 10 affected sheep and goats was collected for DNA extraction. Phenotypic data about associated malformations was collected of the enrolled animals. Sanger sequencing was performed and genetic variants in the samples were identified, and compared with reference sequence. All the observed (reported and novel) variants were analyzed statistically for their association with atresia ani. Six single nucleotide variants were observed in *BMP4* and 2 in the *GLI2* gene. In *BMP4* gene, only one missense variant T>C (7:68685799) was in the coding region that caused the change in amino acid (p.M9T) and 5 in the non-coding region. A TT deletion was observed at position 10:36683796 in 4 goat individuals. Two variants (2:199703939 and 2:199703953) in the coding region of the *GLI2* gene caused the T to C transition. The variants observed in the coding region are much important especially, the *BMP4* variant that causes a change in amino acid (p.M9T). Our findings indicate that p. M9T in *BNP4* gene might be contributing to atresia ani in sheep and goat. However, more studies with larger sample size are needed to confirm the results.

Keywords: Atresia ani; Congenital defect; *BMP4*; *GLI2*; Goat: Sheep

## **Evaluation of land cover status of protected areas using GIS and remote sensing techniques**

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### **Abstract:**

The conservation of natural habitats is not only essential for the natural heritage, but for conserving numerous species that are heavily dependent on these habitats for survival. Remotely sensed data have been proven to be an effective tool for monitoring natural landscapes. In the present study, a high resolution (10 m) cloud-free Sentinel 2A MSI (Multispectral Imager) Level-1C image was acquired on March 25, 2021 and used for mapping land cover classes of the Souss-Massa National Park (SMNP) protected areas, located in the Atlantic coast of Morocco. Ten out of thirteen spectral bands were extracted for this study: B2 – Blue, B3 – Green, B4 – Red, B5 – Vegetation red edge, B6 – Vegetation red edge, B7 – Vegetation red edge, B8 – NIR, B8A – Vegetation red edge, B11 – SWIR and B12 – SWIR. The atmospheric correction of Sentinel-2 products was performed, together with converting to reflectance, and clipping to the national park area. The image was transformed from radiance to surface reflectance by applying the dark object subtraction (DOS) method using the semi-automatic classification plugin (SCP) in QGIS version 3.16.15. This removed the darkest pixels from each band that might be affected by atmospheric scattering. In addition, the supervised classification using Maximum Likelihood Classifier (MLC) was applied. The accuracy of the classified map was assessed based on ground truth data which was collected during field surveys. The Normalized Difference Vegetation Index (NDVI) was calculated, using the NIR and RED bands, to obtain additional information about vegetation cover. Geographical information systems combined with remote sensing were successful at identifying 16 classes of natural and disturbed habitats and at producing a general land cover map of the SMNP which will be useful for conservation of natural habitats and monitoring human activities in the national park. The classification map in comparison with the ground reference data showed a high agreement with an overall accuracy that exceeded 85%. These results underscore the utility of the new generation of multispectral sensors as a cheaper and easier alternative for mapping and discriminating land cover types.

**Keywords:** protected areas, geographical information systems, remote sensing, land cover.

*Oral Presentation*

## **A Study on Cytotoxicity Induced by Extracts Obtained from Algerian Fir (*Abies numidica* de Lannoy ex CARRIERE) Leaves using *Artemia salina***

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### **Abstract:**

Algerian fir is an endemic conifer, it is a medicinal plant. It was used traditionally to treat inflammation and respiratory problems. Few studies have been done and little was reported on this essence. The objectives of our research were the extraction of secondary metabolites from Algerian fir leaves and evaluation of their cytotoxicity ability *in vitro* against *Artemia salina*. The extracted fractions (ethyl acetate and *n*-butanol) were diluted with sea water and were tested against 10 larvae. After the incubation for 24 hrs, the died larvae were calculated and the lethal dose was determined. The results revealed that ethyl acetate fraction presented a noticeable effect against *artemia salina* larvae compared with *n*-butanol fraction. To best of our knowledge no previous reports have been published about the cytotoxicity of this plant against *artemia salina* larvae. It is very important to exploit a local endemic essence in our country.

**Keywords:** *Artemia salina* larvae; *A. numidica* leaves, cytotoxicity, ethyl acetate, *n*-butanol

## Determination of Antibiofilm and Antiquorum Sensing Activities of Silver Nanoparticles Synthesized by Green Method Using Algae Species

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### Abstract:

With the increase in the number of drug-resistant microorganisms and the emergence of mutant strains, the need for continuous and successful development of effective therapeutics against bacterial pathogens and antibiotic resistance has emerged. Recently, silver nanoparticles, which are non-toxic to the human body at low concentrations and have broad-spectrum antimicrobial properties, have come to the fore in the search for effective and sustainable solutions. Another new treatment of antibiotic-resistant bacteria, Quorum quenching (QQ) is seen as a solution to the search for alternative antimicrobial treatments, since it disrupts microbial communication. Quorum quenching (QQ) is chemicals that trigger QQ diminish or even eliminate the production of virulence factors (including biofilm development). In the current study, the extracts of microalgae *Klebsormidium subtile* (dry and fresh biomass) and cyanobacteria *Oscillatoria princeps* (fresh biomass) were used for the green synthesis of AgNPs. Antiquorum sensing activity assay, violaceum quantitative evaluation and biofilm inhibition assay of AgNPs were studied. The antiquorum activity of AgNPs on violacein production by *Chromobacterium violaceum* ATCC 12472 was tested by an agar diffusion method. The plates were determined the inhibition of pigment production around the well. The antibiofilm activity of AgNPs were determined by inoculating clinical pathogens *S. aureus* (ATCC 29213), *B. cereus* (709 Roma), *P. aeruginosa* (ATCC 27853) and *E. coli* (ATCC 25922) in a 96-well microtiter plate containing 100 µL concentrations of extract. The anti-QS properties of AgNPs algae extracts (*K. subtile* - dry and fresh; *O. princeps* - fresh) showed colourless colony formation, which is an indicator of anti-QS capacity against the *C. violaceum* strain. In this study, the antibiofilm activity of different concentrations of AgNPs synthesized from *K. subtile* (fresh and dry) and *O. princeps* (fresh) showed a reduction in biofilm formation against all test pathogens used. This implied that the biosynthesized silver nanoparticles were active against bacterial biofilm.

**Keywords:** *Klebsormidium subtile*, *Oscillatoria princeps*, Silver Nanoparticles, Anti-quorum Sensing, Violaceum, Antibiofilm

This study was partially generated project supported by a grant Kırşehir Ahi Evran University Kırşehir, Turkey. "Synthesis of Silver Nanoparticles Using *Klebsormidium subtile* and their Antibacterial Activity (MMF.A4.21.009)"

## **Anaerobic Digestion of Lignocellulosic Content Using Cattle Manure and Ruminant Waste**

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### **Abstract:**

Rapidly depleted fossil fuel resources threaten the lives of future generations by causing irreparable damage to the environment and natural cycle. Therefore, low cost and environmentally friendly renewable energy production gains great importance. Anaerobic digestion (AD) of various biomass streams is practiced worldwide to reduce waste, generate renewable energy and reduce greenhouse gas emissions. One of the alternative sources of biomass is cattle manure (CM), which can reach large quantities. With the management of CM using anaerobic digestion, solutions to environmental and health problems can be produced. Likewise, cattle ruminal wastes from slaughterhouses often cause environmental and disposal problems. Therefore, there is great environmental pressure in many parts of the world to determine how best to handle animal waste. It is known that CM is widely used in the AD process, and ruminal microorganisms facilitate the hydrolysis of lignocellulosic substrates in anaerobic digestion. However, there are limited studies in which ruminal waste is applied together with CM as a co-substrate. In this study, the use of ruminal content as inoculum and co-substrate was investigated by setting up cattle manure AD experiment sets in batch bioreactors with 300 ml volume under mesophilic conditions. The obtained biogas amounts reveal that co-digestion of CM and ruminal wastes is an effective treatment for biogas production, which provides high cumulative biogas yield with stable performance. It has been observed that ruminal fluid microorganisms are effective in the production of volatile fatty acids (VFA) from lignocellulosic content. At the end of the 25th day when the bioreactors reached a stable state, the VFAs detected in the effluent sludge remained below the limit value of 2 g/L and did not cause an accumulation that would cause inhibition. In order to demonstrate the applicability of the cumulative biogas yield increase obtained by ruminal waste co-substrate application in manure biogas plants, it is recommended to examine continuously operated bioreactors with varying organic loading rates for future studies.

**Keywords:** ruminal waste, lignocellulosic content, anaerobic digestion, cattle manure.

## **Computational Analysis of Amaging NsSNP in Human STXBP1 Gene Involved in Early Infantile Epileptic Encephalopathy: Molecular Modelling and Dynamics Study**

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### **Abstract:**

Early Infantile Epileptic Encephalopathy also known as Ohtahara Syndrome is one of the most severe and earliest forms of epilepsy, characterized by early onset seizures. It affects newborns and children between two and six years old. The STXBP1 gene encodes the Synthaxin binding protein1a that is involved in SNARE complex formation which contributes in synaptic vesicles exocytosis. STXBP1 gene mutations have been identified in patients with early infantile epileptic encephalopathy. The aim of this study is to identify the most pathogenic polymorphisms of the gene STXBP1 and determine their impact on the structure and stability of Stxbp1. Using thirteen prediction tools, we identified 11 nsSNPs (S42P, H103D, L256P, C354Y, L365V, R190W, R235G, D238E and R406C P335S and G544D) as deleterious. Consurf analysis results revealed that all these nsSNPs are highly conserved. The comparison between the wild type Stxbp1 structure and its mutant forms showed that all these nsSNPs affect the protein structure on different levels. In addition, we observed that R190W, R406C and G544D mutations identified as associated with early infantile epileptic encephalopathy highly affect the protein structure. Moreover, the mean root-square deviation, root-square fluctuation, and radius of gyration analyses have shown that all of the nsSNPs affect the protein stability, residual fluctuation and three-dimensional structure with different impact levels. This is the first comprehensive study, where STXBP1 gene variants have been analysed using in silico tools. However, functional analyses are needed to elucidate the biological mechanisms of these polymorphisms in the early infantile epileptic encephalopathy.

**Keywords:** STXP1 gene; Early Infantile Epileptic Encephalopathy; Molecular modeling; Molecular dynamic simulation; non-synonymous SNP

## **Impact of Climate Change on Ecological Balance and Biodiversity**

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### **Abstract:**

Regeneration is a frequent phenomenon in invertebrates. It is also observed in more evolved beings, in particular certain vertebrates, including Amphibians, what allowed them to survive in the event of serious injury. The aim of our study is to see if temperature changes affect the ability of the hind limbs to regenerate in amphibians. For this purpose, *Bufo mauritanicus* tadpoles (lots of 4 tadpoles of the same stage of development) are subjected to different temperatures (4°C, 22°C, 38°C, and thermal shock) after having undergone an amputation of a part of a hind leg. Groups of tadpoles are selected as follow: Group A consists of 4 control tadpoles and 4 amputees who were exposed to 4°C for 2 hours per day and then returned to room temperature. Group B consisting of 4 control tadpoles and 4 amputees who were exposed to a temperature of 38°C throughout the experiment. Group C consisting of 4 control tadpoles and 4 amputees who were exposed to thermal shock for 1 h at 4°C and 1 h at 38°C per day throughout the experiment. Group D, consisting of 4 control tadpoles and 4 amputees, were exposed to a temperature of 22°C throughout the experiment. The results show that the amputees of Group A stop regeneration at the healing stage, which is very long compared to the other groups due to the slowing down of the mechanism due to the cold. Group B individuals also stop regeneration at the healing stage because tadpoles metamorphose quickly. For Group C individuals, development is stopped at the stage of healing. On the other hand, the individuals of Group D, who were exposed to the laboratory ambient temperature, has succeeded in regenerating the amputated part of the hind paw. In conclusion, temperature variations affect amphibian regeneration.

**Keywords:** Regeneration, anuran amphibians, temperature, hind leg, tadpole, metamorphosis.

*Oral Presentation*

## **Determination of Areas to be in Hippotherapy Application Facilities #**

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### **Abstract:**

Hippotherapy practice facilities; these are the areas where the client (individuals in need and disabled individuals), client family members, specialist healthcare team, hippotherapy horse trainer, tow truck, side holder and volunteers actively use in hippotherapy sessions and at the same time hippotherapy horses lead their lives. Having adequate facilities in hippotherapy practices is important for the efficient and safe conduct of the sessions. In this context, a field study was conducted in Ankara which is located in the Central Anatolian Region of Turkey and nine equestrian sports clubs were examined in the field study. The clubs were examined with the situational observation method and the areas that should be in the hippotherapy application facility were tried to be determined by the researchers. As a result of the study, it was evaluated that the facility structure for hippotherapy practice in Ankara could not be determined, but if necessary hippotherapy applications could be made in the existing equestrian club facilities as a result of providing the necessary conditions in accordance with the legal regulations. It should be ensured that hippotherapy facilities are built with the support of experienced hippotherapy horse trainers in hippotherapy practices and facility design processes, increasing the accessibility of disabled individuals and spreading hippotherapy practices first at the regional and then at the national level by using scientific methods.

**Keywords:** barn, facility, hippotherapy, horse, manege

# Let's Develop Networks and Create Opportunities for Hippotherapy (Hippotherapy Turkey Project Center funded by European Union) 30.12.2019-IPA/2019/413-002

## **Knowledge, Attitudes, and Practices (KAP) Survey Regarding COVID-19 in Punjab-Pakistan**

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### **Abstract:**

This study aimed to evaluate knowledge, attitudes, and practices towards COVID-19 among the general population with different demographics in the province Punjab-Pakistan. A cross-sectional online survey (n= 405) was conducted during the lockdown through a convenient sampling approach. The majority of the respondents were males and had COVID-19 victims in their families. Around 213 (52.6%) respondents reported awareness about COVID-19. About 262 (64.7%) individuals knew prominent clinical symptoms of COVID-19 as shortness of breath while 143 (35.3%) responded conversely. Out of a total of 405 respondents, 295 (72.8%) showed a positive attitude that plasma therapy is effective in treating COVID-19. There were 270 (66.6%) participants who agreed that the government of Pakistan has handled the COVID-19 crises very well in comparison with 135 (33.3%). About 292 (72.1%) individuals reported good practices by avoiding visits to crowded places, i.e. weddings, gyms, social gatherings, and shopping malls. There were 185 (45.7%) individuals who claimed to wear a mask when leaving home. However, 202 (49.9%) respondents reported that their local hospital lacks the required facilities to treat COVID-19. On analyzing potential risk factors by chi-square analysis, our study highlighted a significant association between COVID-19 patients in their families and the knowledge of plasma therapy as a treatment ( $P = < 0.0001$ ). Moreover, we also deduced that the knowledge about the quarantine concept ( $P = < 0.0001$ ) was also significantly associated with the presence of COVID-19 victims in their families. As the global pandemic is of great concern not only on the human but also on the animal side due to the zoonotic nature of the SARS-CoV-2. Therefore, health promotional campaigns are in need to maintain a positive response.

**Keywords:** COVID-19, KAP survey, public health, SARS-CoV-2

## Frequency and distribution of Simple Sequence Repeats in Retroviridae (RV) genomes

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### Abstract:

Microsatellites or simple sequence repeat (SSR) are made up of 1-6 (or more) bp of DNA or RNA, which is present in tandem repeated sequences in the genome. The microsatellite is ubiquitously present across the genome in viruses; prokaryotes and eukaryotes cell and occupy both the coding and non-coding region. The appearance of novel pathogenic viruses are a major concern around the world over the last few decades. So it is very important to study the genome of the virus to understand the evolutionary and functional aspects. The genetic material of the Retroviridae is both DNA and RNA. Single Stranded and positive-sense RNA about 7-13 kbs in length. Virions are spherical, linear, envelopes and 80-100 nm in diameter. One of the most dangerous types of virus causing various diseases including as cancer (leukemias, lymphomas, sarcomas), immune-deficiencies, autoimmune diseases; lower motor neuron diseases. Full length genome sequences were assessed from NCBI (<http://www.ncbi.nlm.nih.gov/>) and analyzed using MISA (<https://webblast.ipk-gatersleben.de/misa/index.php?action=1>) software. A total of 2732 SSRs and 216 cSSRs were extracted from the RV genomes ranging from 9 (RV7) to 55 (RV69) while the cSSR value ranged from 0 to 10 (RV41). The repeat incidence of Mono, Di and Tri nucleotide of SSR is 856, 1507 and 334 resp. The most prevalent mono-nucleotide repeat was "A" comprising of around 55% (473 of 856) of the mono-nucleotide SSRs followed by "C" (167 of 856). Similarly, for di- and tri-nucleotide repeats the most prevalent motif was AG/GA and GGA/CCT respectively. Retroviridae genomes had a minimum of ~79% incident SSRs present in the coding regions and ~21% in non-coding region. The protein specific localization revealed almost twenty three percent of the SSRs (511) to be present in Envelope protein with pol-protein coming in a distant second position with 453 SSRs. Notably, most viruses with humans, apes and related species as hosts exhibited exclusivity of mono-nucleotide repeats in AT region, a proposed predictive marker for determination of humans as host in the virus in course of its evolution and could be involved in recombination, leading to sequence diversity that drives evolution and the host adaptation of the virus.

Keywords: Simple sequence repeats - Retroviridae - Prevalence - Distribution - Evolution

## Gene Expression Analysis using Western Blot Analysis in *Yersinia ruckeri* Isolates

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### Abstract:

In this study, the *Yersinia ruckeri* isolates was developed in the TSA medium and at 1.0 OD density at 600 nm. Then, 100ul of the same concentration of suspension was added to the 25 ml TSA and 25 ml SW medium and incubated for 24 hours at different temperatures (15, 20, 25, 37). After incubation at different temperatures, the westen blot system was bacteria-specific optimized for *Y. ruckeri* isolates. In western blot analysis, gene expression analyzes were determined by gel size and marker, and upregulation or downregulation was determined compared to the control group. Given the results of the protein expression obtained from the page ruler prestained protein ladder, significant changes in the level of gene expression are observed under different temperature conditions of the strain. One of the most striking ones is the gene product seen in the 20 and 25 °C groups at the level of 110 kDa. While this gene product is not expressed at low and high temperatures; the optimum level of expression is significantly increased. Increased gene products due to temperature increase are seen at approximately 90 kDa, 65 kDa, and 30 kDa. When the temperaturedependent expression levels decreased, it was found to be around 40 kDa and 45 kDa. According to the results of the study, it has been observed that up or down-expression levels can be examined in the gel imaging system without the need for modification in the method in order to perform the gene expression method with western blot analysis in bacteria.

Keywords: Westen blot, gene expression, *Yersinia ruckeri*, fish diseases.

Acknowledgements: This study was carried out by Van Yuzuncu Yil University, Scientific Research Projects Coordination Unit within the scope of FBA-2018-6895 project number.

## Investigation of The Effects of Some Phytochemicals on *Yersinia ruckeri* and Antimicrobial Resistance

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### Abstract:

In this study, it is aimed to investigate the effects of *Moringa oleifera* and *Sorbus domestica* plant extracts on bacterial disease agents *Yersinia ruckeri* in aquaculture. Morphological and biochemical properties of 2 different *Y. ruckeri* isolates were determined. Then, Real-Time PCR analysis and gene sequencing of the isolates were identified. Phytochemicals (*M. oleifera* and *S. domestica*) and antibiotics (Oxytetracycline (OX) and Enrofloxacin (ENR)) were used together in the antibiogram test of antibiotics compared to the effect status of antibiotics. Also, the effects of phytochemicals on *Y. ruckeri* growth were examined comparatively by spectrophotometrically measuring at 600 nm wavelength every 2 hours according to bacterial growth densities with 10 different groups formed on TSB medium. As a result of the study, it was observed that the isolates formed Gram negative, catalase positive, oxidase negative, mobile and typical *Y. ruckeri* colonies. After the biochemical tests performed with Microgen ID panel, 99.85% similarity was determined. The isolates overlap with the 16S rRNA gene region after sequence analysis, and 99% of the isolates were similar in phylogenetic analysis. After the antibiogram test, Oxytetracycline and Enrofloxacin antibiotics were resistant to *Y. ruckeri* but the effects of phytochemicals were less on solid medium (MHA). As a result of the measurements carried out in liquid medium (TSB), it was observed that phytochemicals such as *M. oleifera* and *S. domestica* inhibit the growth of bacteria by 40-50%. As the importance of antibiotic resistance is increasing day by day, we believe that these phytochemicals will give positive results in treatment instead of using antibiotics.

Keywords: Real-Time PCR, sequencing, antibiogram, fish diseases, phytochemical.

Acknowledgements: This study was carried out by Van Yuzuncu Yil University, Scientific Research Projects Coordination Unit (Master thesis) within the scope of FYL-2018-7464 project. This presentation was produced from Mustafa ÇEVİK's master's thesis under the consultancy of Şükrü Önalın.

## **The effect of COVID-19 vaccine literacy on attitudes towards COVID-19 vaccine among university students**

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### **Abstract:**

The COVID-19 pandemic is the most important health problem of our time. Vaccine literacy and attitude towards vaccines, thoughts about vaccines developed for COVID-19 are important concepts for university students in the period when social life is at its highest. The majority of the vaccination population includes university students. This research aimed to determine the effect of COVID-19 vaccine literacy on the attitudes towards the COVID-19 vaccine among university students. This descriptive and cross-sectional study was conducted with 2384 university students in September and October 2021. "Demographic Information Form," "COVID-19 Vaccine Literacy Scale," and "Attitudes towards the COVID-19 Vaccine Scale" were used to collect the data. Data were evaluated via descriptive statistics, independent group t-test, ANOVA, and Tukey HSD and Pearson Correlation analysis. The mean score on the COVID-19 Vaccine Literacy Scale was  $27.26 \pm 6.49$ . It was determined that the participants scored  $3.23 \pm 0.70$  on the positive attitude subscale and  $2.76 \pm 0.81$  on the negative attitude subscale of the Attitudes Towards the COVID-19 Vaccine Scale. Furthermore, a statistically significant, positive, and weak level relation was determined between the negative attitude subscale point averages and COVID-19 Vaccine Literacy Scale total points ( $r = 0.097$ ,  $p = 0.000$ ). It was concluded that the positive attitude towards the COVID-19 vaccine decreased as the COVID-19 vaccine literacy increased. Strategies need to be developed to increase vaccine literacy and to provide students with reliable information about the COVID-19 vaccine.

**Keywords:** SARS Coronavirus, university students, vaccine literacy, vaccine attitude

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## Determination of Antibiotic Resistance Profiles in *Acinetobacter* Species Isolated from Tank Milk

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### Abstract:

*Acinetobacter* species are heat resistant, psychrotrophic bacteria. The heat-stable, proteolytic and lipolytic enzymes produced by these bacteria can cause deterioration in milk even after the pasteurization step. These enzymes can be easily produced in raw milk stored in the cold. They can continue their activities due to the extracellular enzymes. Another important characteristics of these bacteria is that they can develop resistance to many antibiotics and disinfectants. The aim of this study was to determine the occurrence of *Acinetobacter* spp. in tank milk from Hatay provinces and to analyze their antimicrobial susceptibility. In our research, between April 2016 and December 2016, *Acinetobacter* spp was isolated and identified by using MALDI-TOF-MS (Bruker Daltonik GmbH, Leipzig, Germany). The identified *Acinetobacter* isolates were tested to determine the antimicrobial resistance profiles towards 23 antibiotics using the disc diffusion method. Sixty tank milk samples were investigated. Of the 13 (21.6%) *Acinetobacter* isolates isolated from a total of 60 milk samples, 9 (15%) were identified as *Acinetobacter baumannii* ,3 (5%) as *Acinetobacter ursingii* and 1 (1.6%) as *Acinetobacter iwoffii*. Resistance to gentamicin, chloramphenicol, amoxicillin and clavulanate, ceftazidime, aztreonam, florphenicol, cefpodoxime, cefuroxime was 7.7%, 15.3%, 15.3%, 15.3%, 53.8%, 7.7%, 15.3% and 7.7% respectively. None of the isolate was resistant to nalidixic acid, ciprofloxacin, enrofloxacin, levofloxacin, norfloxacin, penicillin, tetracycline, sulfamethoxazole/trimethoprim, ampicillin, imipenem, colistin, cephalothin, ceftazidime. As a result, the raw tank milk samples were found to be contaminated with different species of *Acinetobacter*. Another important finding of this study is the antimicrobial resistance characteristics of these strains, which might pose public health problem. Therefore, it may be said that raw tank milk samples would be better to be monitored for this potentially pathogenic bacteria.

Keywords: *Acinetobacter*, Tank Milk, Antibiotic

## Determination of the Presence and Antibiotic Resistance Profile of *Escherichia coli* Isolated from White Brined Cheese

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### Abstract:

Dairy products especially cheese play an important role in maintaining body integrity and health well-being as well as reducing risks of nutritional deficiencies through their composition of minerals, fats, proteins and vitamins. Cheese is one of the major dairy products commonly consumed worldwide. Due to this widespread consumption, it may be the cause of foodborne diseases. Cheese processing contains integrated procedures from milking to retail market. Any hygienic problems associated with milk and processing stages may cause pathogen contamination. *Escherichia coli* is not only regarded as faecal contaminant of milk, but also an indicator of poor hygiene and sanitary practices during cheese processing. Antimicrobial resistance has been recognized as an emerging worldwide problem in public health. This study aimed to evaluate the presence of *E. coli* in white brined cheese and to determine antibiotic resistance patterns of *E. coli* isolates. For this purpose, 100 cheese samples collected from dairy processing plants' output shops, local markets and district markets in Aydın province. Conventional method was used for *E. coli* analysis and isolates obtained from samples were confirmed by PCR. All of the strains were tested for antibiotic resistance by Kirby-Bauer disk diffusion method. The presence of *E. coli* was determined in 15 samples (15%). Among 13 *E. coli* isolates, the resistance to each antibiotic was as follows: ampicillin 86.6%, aztreonam 46.1%, oxytetracycline and trimethoprim-sulfamethoxazole 40%, gentamicin 26.6%, cholaramphenicol and ciprofloxacin %20 and cefotaxime 6.6%. None of the isolates were resistant to meropenem and ceftazidime. Of all strains, 13.3% were found susceptible to all antibiotics and 40% of *E. coli* were multidrug resistant. It was shown that the white brined cheeses were contaminated and *E. coli* isolates were considerably antibiotic resistant. Hygiene measures should be applied in dairy industry to struggle with the diseases caused by *E. coli* and rational antibiotic use should be strictly applied to prevent increased antibiotic resistance.

Keywords: *E. coli*, cheese, antibiotic resistance

## **Potential Use of Propolis in Phytocosmetic as Aesthetic and Phytotherapeutic Constituent**

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### **Abstract:**

Phytocosmetic is an important aspect of traditional medicine in several culture. Researchers are now focusing to find new and effective ingredients of natural origin. Those ingredients are safer with accessible cost and more accepted and appreciated by consumers. Propolis is a natural beehive product extensively used in traditional medicine and well known for its pharmacological properties. We aimed in the present study to investigate the potential use of propolis as an aesthetic and phytotherapeutic constituents in phytocosmetic. Propolis was extracted using 80% ethanol. Total phenolic and flavonoid contents were determined calorimetrically. Free radical scavenging ability and reducing capacity were evaluated using four assays and expressed as IC<sub>50</sub> values. Antibacterial activity was evaluated by the determination of minimum inhibitory concentration (MIC) on 11 Gram- positive and Gram-negative bacteria. The wound healing activity of 30% ethanolic extract and propolis ointment was studied using excision wound in the antero-dorsal side of the rats. For computing the percent of wound healing, the area of wound was measured during 18 days. The tested propolis was rich in phenolic and flavonoid content and demonstrated an interesting antibacterial and antioxidant activity. There was no statistically difference between treatments and control groups in most of days. Wound treated with propolis appears to display a less degree of inflammation. Our results indicated that propolis can not only be used as a cosmetic ingredient but also be used as a preventative and curative constituent which might be used as a barrier when applied externally on infected and non-infected skin.

**Keywords:** propolis, phytocosmetic, antioxidant activity, antibacterial activity, wound healing

## **The Effect of Sunflower Seed on Milk Quality of Dromedary Camel**

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### **Abstract:**

This trial was conducted to study the effect of sunflower seed on the milk production and composition of dromedary dairy camels. Twelve lactating camels, mean 7 years age, average body weight 570 kg divided into control group without sunflower seed and experimental group with 400 g sunflower seed for 1 month. The camels had access to pasture forage in the desert. The sunflower seeds were crushed and fed to camels every morning before going to desert for grazing. The animals had access daily to drinking water. Milk production was recorded and milk composition and fatty acids were determined. The obtained data were analyzed as a completely randomized design. The result showed adding of sunflower seed increased milk production of camels in compared to the control (5.7 and 3.5 liter/day, respectively). Milk fat % was higher in diet containing sunflower seed (4.52 versus 3.6 %). Inclusion of sunflower seed increased milk protein in compared to the control ( $P<0.05$ ). But there was no any difference between treatments regarding to milk lactose and ash % ( $P<0.05$ ). Using of sunflower seed in camels' diet did not influence saturated fatty acids but unsaturated fatty acids increased. The CLA value was 0.38 and 0.29 % and C18:2 was 1.61 and 2.1 % for sunflower seed and control, respectively ( $P<0.05$ ). According to the current study, feeding sunflower seed by 400 g/day to dromedary camels' increased milk production, fat and unsaturated fatty acids of camel milk that effectively influence heart health. Therefore, raw sunflower seed recommended in dromedary camels' diet to improve the milk composition, but it needs to do more experiments on using various amounts of sunflower seed in dairy camel's nutrition.

**Keywords:** Camel, Milk quality, Sunflower seed.

## Microbial Quality of Ayran Produced with Different Nutritional Fibers<sup>#</sup>

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### Abstract:

In this study, microbial data of ayran produced by adding different dietary fibers were obtained during the storage period. With this study, it was aimed to contribute to the daily fiber intake of the consumer by adding psyllium, pea and oat fibers, which have recently been found to be beneficial for health. It is also aimed to consumer, to improve health and to obtain a product with the quality of a sports drink. Experimental groups were designed as follow; K: Control, P1: 0.05% Psyllium, P2: 0.1% Psyllium, B1: 0.5% Pea Fiber, B2: 1% Pea Fiber, Y1: 0.5% Oat Fiber, Y2: 1% Oat Fiber. The products were stored at 4 °C. *Streptococcus salivarius* subsp. *thermophilus*, *Lactobacillus delbrueckii* subsp. *bulgaricus* and coliform analyzes were performed (On the 1st, 7th, 14th and 21st days) in the samples. Ayran samples were made in 3 replications and 2 parallel analyzes were performed from each sample. It was observed that the number of *Str. salivarius* subsp. *thermophilus*, was these bacteria increased decreased on the 7th and 14th while the number of this bacteria increased on day 21st except for group B1 and Y2 ( $p < 0.05$ ). The decrease on the 21st day in the B1 and Y2 groups was found to be statistically significant. When in-group evaluations were made, *L. delbrueckii* subsp. *bulgaricus* number was found to be significant ( $P < 0.05$ ). On the 1st day, no difference was found groups P1, P2 and B2 compared to control. While the P2 group showed a change in bacteria numbers on the 7th and 14th days ( $P < 0.05$ ), there was no difference between day 1st and day 21st ( $P > 0.05$ ). Coliform group bacteria, which is an important hygiene indicator, could not be detected in the experimental groups we produced. As a result of the research, *Str. salivarius* subsp. *thermophilus* and *L. delbrueckii* subsp. *bulgaricus* number remained at 8-9 log CFU/ml levels. With the production of ayran with dietary fiber added, a product with a very high specific bacterial load was produced even on the 21st day. It is considered that this product can be used in gaining healthy eating habits and a specific product for athlete's diet.

Keywords: ayran, dietary fiber, psyllium.

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## **Relationships Between Catalase, Reduced Glutathione, Malondialdehyde, Vitamin C and Total Protein Levels in Simmental Cow's Milk and Milk Cells**

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### **Abstract:**

In this study, to evaluate some antioxidant parameters of Simmental dairy cow's milk and milk cells, the activities of catalase (CAT), the levels of reduced glutathione (rGSH), malondialdehyde (MDA), vitamin C (Vit C) and total protein (TP) were determined and correlations between these parameters were revealed. Milk samples (15 ml each), collected from 28 clinically healthy cows from a private farm, were tested by California Mastitis Test (CMT) and CMT negative samples were included in the study. Briefly, milk cells were isolated from 15 ml milk by centrifugation and then they were sonicated. Milk and milk cell CAT activities, rGSH, MDA, Vit C and TP levels were determined by spectrophotometric methods. TP levels were  $0.043 \pm 0.008$  mg in milk cell of 1 ml milk and  $34.28 \pm 0.656$  mg/ml in milk. rGSH levels were  $21.19 \pm 1.834$  nmol/mg protein in milk cells, and  $25.78 \pm 3.054$  nmol/ml in milk. CAT activities were  $0.13 \pm 0.017$  U/mg protein in milk cells and  $2.391 \pm 0.277$  U/ml in milk. MDA levels were  $2.27 \pm 0.180$  nmol/ml in milk, and Vit C levels were  $68.89 \pm 4.226$  µg/ml in milk. MDA and Vit C levels were under the determination limit in supernatants of milk cells obtained from 15 ml milk. As regards correlations: Milk cell rGSH ( $r=-0.684$ ,  $p<0.01$ ) and milk rGSH ( $r=-0.487$ ,  $p<0.01$ ) levels were negatively correlated with milk cell TP levels. Milk cell rGSH levels were positively correlated with milk rGSH levels ( $r=0.475$ ,  $p<0.05$ ). Milk Vit C levels were positively correlated with milk TP levels ( $r=0.509$ ,  $p<0.01$ ). Although it was weak, there was a positive correlation between milk CAT activities and milk Vit C levels ( $r=0.374$ ,  $p=0.05$ ). As a conclusion, some of the antioxidant parameters of Simmental cow's milk and milk cells were evaluated and discusses.

**Keywords:** Simmental milk cell, CAT, rGSH, MDA, Vit C

## **The Effect of Confusion Caused by Conflicting Information About Nutrition on Healthy Eating Attitudes and Behaviours of Individuals<sup>#</sup>**

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### **Abstract:**

People have the opportunity to obtain the information they need about nutrition from much more information sources than in the past. Information about nutrition through TV, social media, etc. channels is not fully efficient for consumers. In addition, information pollution that is increasing day by day by people who are not experts in the business affects the consumers negatively. Therefore, in this study, the effects on the attitudes and behaviours of university students against information pollution were investigated. For this purpose, face-to-face surveys were conducted between September 2019 and December 2019. Among the questionnaire questions, there are questions about the demographic characteristics of the students and their attitudes and behaviours about the knowledge gained on nutrition. As a result, a total of 423 university students (54.61% female, 45.39% male) participated in the study. According to the results of the analysis, it was determined that they heard conflicting information about chicken meat the most and pickle the least. In addition, with this information pollution, it is revealed that they do not know which of the proposed information to believe. For this reason, people who are not experts in the business can lead to wrong and erroneous results when they direct consumers in every subject.

**Keywords:** Healthy Eating, Conflicting Knowledge, Confusion

<sup>#</sup>This study is supported by Afyon Kocatepe University Scientific Research Projects Coordination Unit. Project Number: 19.SAĞ.BİL.03

## Biofilm Inhibition Efficacy of Quaternary Ammonium Compounds Against *Pseudomonas aeruginosa* Strains

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### Abstract:

Within biofilms, bacterial communities are generally more protected against the effects of antimicrobial agents such as antibiotics, disinfectants and surfactants than planktonic cells. Thereby, biofilms cause major problems in the food processing facilities by being a potential source of contamination of foods that may lead to spoilage or transmission of foodborne pathogens. *Pseudomonas* species are considered one of the most common spoilage microorganisms, and their biofilm production is an important mechanism for the survival. In this context, quaternary ammonium compounds (QAC) are among the most widely used disinfectants and are used for numerous industrial purposes. Therefore, the aim of this study was to investigate the anti-biofilm efficacy of benzalkonium chloride (BC), didecyldimethylammonium chloride (DDAC), N-alkyl-dimethyl-benzylammonium chloride (ADBAC) and cetyl pyridium (CP) from QAC disinfectants against some strains of *Pseudomonas aeruginosa* (VIM-2, ATCC 15442, ATCC 27853, IMP-13, and PAO1). The biofilm formation was performed on 96-well plates. Biofilms were subjected to the QAC disinfectants from 0.5 mg/L to 256 mg/L concentrations, and biofilm inhibition rates were determined based on the optical density measures at OD<sub>570nm</sub>. According to the results, CP showed its highest inhibition effect on VIM-2 and ATCC 15442 with reaching to inhibition rates of 45% and %48 at 256 mg/L concentration, respectively. The most effective concentration of ADBAC was observed as 256 mg/L on VIM-2, ATCC 15442 and IMP-13 strains, with 67%, 64% and 64% inhibition rates, respectively. BC showed its highest biofilm inhibition effect on VIM-2. At 128 mg/L and 256 mg/L concentration, the biofilm inhibition rate was reached to 85%. DDAC was also effective on VIM-2, but not as higher as BC (57% max). DDAC also showed efficacy on ATCC 15442 biofilms between 64-256 mg/L concentrations with 37% inhibition rate average. Overall, the most effective concentration for all tested QAC disinfectants was determined as 256 mg/L. Although the highest biofilm inhibition rate was observed for BC, when considering the number of strains affected and their inhibition rates, ADBAC was determined as the most effective disinfectant for *Pseudomonas aeruginosa* biofilms.

Keywords: *Pseudomonas aeruginosa*, quaternary ammonium compounds, biofilm

*Oral Presentation*

## **Quantitative Microscopic Analysis of Seasonal Functioning Rhythm of Dromedary Camel Testis Form Southern Algeria**

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### **Abstract:**

The dromedary camel is a seasonally breeding animal. The breeding season (also called “rutting period” or “rut”) of this species coincides with the winter months. This study aims to investigate interaction between environmental conditions and functional rhythms of male camel gonads. For this purpose, biometric and histomorphometric analysis were carried out in 62 healthy male dromedary camels form El Oued region. Micrometric measurements and the semi-automatic segmentation methods indicated that during winter season outer and inner diameters of the seminiferous tubules (ST) were significantly higher accompanied by dense and high seminiferous epithelium that occupied  $85.50 \pm 8.45\%$  of the seminiferous tubules surface. This high seasonal activity was also characterized by abundant interstitial tissue which occupied high area and volume associated to significant increase of the intertubular constituent’s volume and hypertrophy of the Leydig cell. The average diameter of the Sertoli cell nuclei was significantly high during the cold season indicates high activity of these cells compared with the hot season ( $P < 0.001$ ). Therefore, the highest ratios of seminiferous tubules to interstitial tissue volume and the highest fraction of intertubular empty space were recorded during the hot season. Cell counting method showed that the true number of Sertoli cells per paired testis was not influenced by the season however the maximal number of Leydig cells per testes was recorded during the winter. The spermatogenic activity showed a continuous process through the year, high level of cell proliferation were observed during the winter marked by high tubular fertility index ( $P < 0.001$ ). Even so, the average percentage of ST containing spermatids and/or spermatozoa and the average number of spermatozoa per seminiferous tubule were higher in the rutting season compared to the rest of the year. These results provide information on testicular functioning in male camels in relation to seasonal climatic changes the southeastern Algerian desert.

**Keywords:** Dromedary camel, Reproductive physiology, Testicular function

## **Evaluation of Acrosome Integrity of Frozen-Thawed Simmental Bull Semen with Different Staining Methods**

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### **Abstract:**

The indicators in predicting spermatozoa fertilizing ability include individual motility and movement scores, but the indicators have not been able to accurately predict the spermatozoa fertilizing ability, Acrosome integrity of spermatozoa cells is an important indicator of the success of the fertilization. Semen cryopreservation results in sublethal damage to sperm due to membrane deterioration and an increased number of spermatozoa that undergo acrosome reaction, these damages lead to fertility reduction. The objective of this study was to compare three methods of staining in order to evaluate bull sperm viability and acrosome integrity after cryopreservation. In the study, 50 semen straws obtained from Simmental bulls with known breeding quality and frozen at different times were used as the main material. A 30-second slow thawing protocol at 37°C was used to thaw frozen semen straws. Motility, spermatozoa concentration, plasma membrane integrity and acrosome integrity parameters of all thawed semen were analyzed. In the evaluation of acrosome integrity, three different complicated staining protocols were applied and the results obtained were compared and an efficient and appropriate staining protocol was tried to be determined. The Computer-Aided Sperm Analyzer (CASA), (SCA<sup>®</sup>, Microptic, Barcelona, Spain) was used to assess frozen-thawed sperm motility, concentration and movement characteristics. Plasma membrane integrity is vital for spermatozoa because the plasma membrane integrity plays an important role in regulating all of the processes in cells. The percentage of plasma membrane integrity in frozen Simmental bull semen used in this study ranged from 50-60% and can be considered good. According to our study results, spermatozoa acrosome integrity can be easily tested using the Coomassie Blue, Trypan Blue-Giemsa and Spermac staining procedures. TBG staining was not very effective in evaluating frozen semen because diluent components were also stained, causing difficulty in analyzing the staining results. In addition, analysis of TBG and Spermac staining results takes more time than Coomassie blue staining results.

**Keywords:** *Acrosome Integrity, Frozen-Thawed Semen, HOST, Simmental bull*

This work was supported by the Project Management Office of Ondokuz Mayıs University with the project numbered PYO.VET.1904.21.010.

## Synthesis, Biological Screening And Computational Studies Of Five Membered Heterocyclic Hybrids containing Oxygen, Nitrogen And Sulfur As Potential Anticancer And Antimicrobial Agents

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**Abstract:** Aim of the study: Heterocyclic hybrids are a significant source of inspiration for the design and development of innovative lead molecules for the treatment of many diseases. As a result, the goal of this work was to perform a multistep synthesis and biological and computational assessment of a series of five membered heterocyclic hybrids (1, 2, 3, 4a-e, and 5a-e) containing oxygen, nitrogen, and sulfur as possible anticancer and antibacterial agents. The heterocyclic hybrids were synthesized by standard methods of organic synthesis and their structures were unraveled by spectroscopic techniques such as FT-IR, Mass spectrometry and <sup>1</sup>H and <sup>13</sup>C NMR. All of the target compounds were screened for anticancer and antimicrobial activities against selected cancer cell lines and bacterial and fungal strains and cytotoxicity on normal human liver cell lines LO2. Additionally, the most active compounds were computationally evaluated for elucidating the binding interaction with potential anticancer and antimicrobial target proteins using Schrodinger suite. Furthermore, the promising compounds were assessed for their drug-like properties using SwissADME tool. With MICs ranging from 0.5 to 8 µg/mL, molecules 4e and 5e demonstrated potential antimicrobial (antibacterial and antifungal) properties. Compound 3 shown substantial anticancer activity with an IC<sub>50</sub> value of 0.49±1.45 µM against the human gastric cancer cell line (BGC-823) and compound 4e demonstrated robust anticancer activity with an IC<sub>50</sub> value of 0.65±0.53 µM against the breast cancer (MCF-7) cell line, respectively. When compared to human normal liver cell lines, all drugs demonstrated preferential toxicity towards cancer cell lines. Molecular docking investigations of the most effective compounds (3 and 4e) against chosen microbial and cancer proteins showed the compounds' critical binding interactions with the target enzymes. Compounds 3 and 4e are interesting lead compounds that might be developed into therapeutic candidates.

**Keywords:** heterocyclic hybrids; cancer; microbial infections; docking

## Seminal Plasma mitochondrial adenosine triphosphate synthase 6, manganese superoxide dismutase, cytochrome P450 reductase and lactate dehydrogenase levels of male with oligozoospermic and normozoospermic

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### Abstract:

Male infertility can be caused by a variety of factors, including congenital, acquired, or idiopathic factors that impair spermatogenesis. Sperm analysis remains the gold standard for diagnosing and managing of the male infertility. Nowadays, semen analysis is targeted to determine the sperm quality and function. The purpose of this study was to determine the seminal plasma levels of mitochondrial encoded Adenosine triphosphate synthase 6 (mtATP6), manganese superoxide dismutase (Mn-SOD), NADPH-cytochrome P450 reductase (CPR), and lactate dehydrogenase (LDH) in normozoospermic and oligozoospermic individuals, as well as to assess the relationship between spermogram data and mentioned parameters. The study was composed of two groups: Normozoospermic (n=30, sperm concentration  $\geq 15$  million/mL), and Oligozoospermic (n=30, sperm concentration  $< 15$  million/mL). The volunteers who were admitted to Selcuk University Medical Faculty IVF center was included to the study. As a result of the study; mtATP6 levels in normozoospermia were significantly higher ( $0.97 \pm 0.50$  ng/mg protein,  $p = 0.008$ ) than in oligozoospermia ( $0.64 \pm 0.32$  ng/mg protein). LDH levels in normozoospermia were higher ( $0.25 \pm 0.074$  U/mg protein,  $p = 0.007$ ) than in oligozoospermia ( $0.199 \pm 0.049$  ng/mg protein). MnSOD and CPR levels did not differ between groups. The levels of mtATP6 were found to be significantly related to sperm concentration, total number and total motility, immotility, total progressive motile sperm count (TPMSC), and long head anomaly. LDH levels were found to be associated with the long head and short tail anomaly. We determined that the certain spermatogenetic anomalies may be caused by energy regulation flaws. In oligozoospermia, we did not find evidence of the activity of MnSOD or CRP enzymes, which are thought to be determinative parameters in response to increased oxidative stress.

Keywords: cpr, infertility, ldh, MnSOD, mt-atp6

## **Investigation of the Effects of Syringic Acid and Sinapic Acid on Brain Tissue Against Cadmium Toxicity in Mice**

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### Abstract:

Harmful chemical of Cadmium exposure is often encountered in developing industry and technological necessities all over the world. The heavy metal can accumulate easily in human and animal organs and its exposure effect much more by a long half-life and a very low excretion. Its brain accumulation leads to neuronal alteration and many destruction. In this study, it is aimed that the protective effects of syringic and sinapic acid against acute cadmium toxicity in the brain tissue were comparatively examined. During first seven days, sterile distilled water was orally given to the first (C) and second (TT) groups via gavage. In second (TT), third (TS) and fifth (TSINA) groups, a single dose of 1.4 mg/kg CdCl<sub>2</sub> within isotonic is administered intraperitoneally at first day of experiment. During first seven days, 25 mg/kg syringic acid was orally given to the third (TS) and fourth (S) groups via gavage. During first seven days, 10 mg/kg sinapic acid was orally given to the fifth (TSINA) and sixth (SINA) groups via gavage. After the animals were sacrificed, CNS tissues were fixed in 10%formalin and followed for FFPE and stained by H&E. TT and lesser TS group lesions (neurodegeneration and apoptosis) were co-found in cerebral cortex, hippocampus and cerebellum. TSINA group lesions were more decreased according to other toxicity groups. TSINA and subsequently TS group lesions were found more succesfully against neuronal damages which resourced by cadmium toxicities. In conclusion, herbal origin of sinapic acid can be a better and natural choice for relieving of neuronal damages after acute cadmium toxicities.

Key Words: Acute Cadmium Toxicity, Central Nervous System, Neuroprotection, Mouse modelling

*Oral Presentation*

## **Canine Coronavirus Antibodies Seroprevalence and Associated Risk Factors among Pet and Kennelled Dogs in Turkey**

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### **Abstract:**

Canine coronavirus (CCoV) is a highly contagious virus and causes gastrointestinal infection in dogs. Young puppies are most susceptible to CCoV infection and it occasionally causes death in young puppies. The purposes of this study were to survey the seroprevalence of CCoV in the pet and kennelled dogs and to determine risk factors on CCoV infection in dogs. A total of 119 sera samples, 61 sera samples from pet dogs and 58 sera samples from kennelled dogs, were collected during the months of September 2018 and July 2019. Sera samples were tested for CCoV antibodies using an indirect enzyme linked immunosorbent assay (i-ELISA). The following variables were tested for statistical association with CCoV seropositivity: age ( $\leq 3$  years and  $>3$  years), sex (female and male), breed (pure and cross) and breeding type (pet and kennelled). Logistic regression analyses were used to determine risk factors for CCoV seropositivity. The seroprevalence of CCoV was found to be 52.9% (63/119, 95% CI: 43.5-62.1), with 25/61 (40.9%) positive pet dogs and 38/58 (65.5%) positive kennelled dogs. Seroprevalence was higher in dogs aged  $>3$  compared with  $\leq 3$  years (OR: 0.35; 95% CI: 0.16-0.74). Furthermore, seropositivity rate of CCoV was higher in kennelled dogs than pet dogs (OR: 0.37, 95% CI: 0.17-0.77). However, statistical analyses indicated that there were no significant differences in the seroprevalence of CCoV among different ages, sexes, breeds and breeding types. The results of this study indicate that CCoV infection is widespread among the studied dog population. Therefore, vaccination can be applied to prevent the introduction of CCoV infection into dog populations and to reduce the prevalence of infection.

**Keywords:** canine coronavirus, seroprevalence, risk factors, pet dogs, kennelled dogs, Turkey.

## **Mothers' Experiences and Product Choices in Complementary Feeding Period: A Qualitative Study**

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### **Abstract:**

Complementary nutrition is defined as feeding the child with healthy and safe foods in addition to breast milk in order to ensure growth and development in the 6-24 month period and to shape healthy eating behavior. The aim of this study is to investigate the experiences of mothers with 6-24 month old babies in the complementary feeding period and their specific product choices. In the study, 14 mothers with an average of 29 years old and 13 months old babies were interviewed. Online interviews were made with the participants who agreed to be interviewed voluntarily, by making an appointment at a suitable time period, and these interviews were then transcribed. These recorded interviews lasted an average of 40-50 minutes. The answers given by the mothers to the questions were coded, and themes related to complementary feeding experiences were determined. The data obtained were evaluated in seven themes: mothers' experiences and feelings, methods and products used in food preparation and cooking, methods and products used in feeding and drinking, methods and products used in preserving foods, baby-specific practices, product selection criteria and aesthetic concerns. It has been observed that mothers have a high level of anxiety to do the best for their baby, and glass, porcelain and ceramic tools come to the fore in the products they use. The choice of material that is healthy and does not leave chemical residues is at the forefront. Steaming is the main cooking method that mothers trust and use for their babies. In general, mothers prefer to prepare meals fresh and do not store them for a long time. While mothers give importance to the aesthetic appearance of the products they choose, they prioritize practicality in the using. It has been concluded that the preparation of foods in accordance with food safety principles and the selection of tools used for this purpose are important issues that should be considered for infant health.

**Keywords:** complementary feeding, cooking, nutrition, storage

## **Investigation the Apoptotic Effects of Indomethacin on SH-SY-5 Neuroblastoma cell line**

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### **Abstract**

Neuroblastoma is one of the most common types of cancer among children, often beginning in infancy. Despite the trials of many anti-cancer drugs and all the methods used in the treatment, neuroblastoma is a cancer type whose proliferation and migration is difficult to prevent. Indomethacin, a derivative of indole acetic acid, is a non-steroidal anti-inflammatory drug with a strong anti-inflammatory effect. Indomethacin has anti-inflammatory effects as well as analgesic and antipyretic effects. In one study, it was shown to induce apoptosis in the EC109 esophageal cancer cell line by releasing the second mitochondria-derived caspase activator and activating caspase-3. Therefore, it was aimed to determine the antiproliferative property of Indomethacin and to investigate and explain its interaction in the apoptosis process in neuroblastoma cancer cells in vitro. In this study, SH SY-5 cancer cell line was used. The MTS assay was used to measure cell viability. Annexin PI tests were used to clarify its role in apoptosis. In the indomethacin treated cells, cell proliferation rates were reduced (%65.51). Apoptotic cell rates after 72 h - indomethacin treatment was 46.28 % in SH SY-5 cell line which was statistically significant (p <0.05). It has been concluded that indomethacin might be an effective compound in SH SY-5 neuroblastoma cancer treatment.

**Keywords:** indomethacin, Apoptosis, Neuroblastoma

*Oral Presentation*

## **Calcium-dependent cysteine protease with fibrinolytic potential in *Melia dubia* latex**

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### **Abstract:**

*Melia dubia* of the Meliaceae family is one of the latex-bearing plants which has been topically used for various skin diseases and to heal wounds. The present work reports the presence of protease in the latex of *Melia dubia* and evaluation of the fibrinolytic activity of protease. Latex protease was partially purified by ammonium sulphate precipitation and subjected to dialysis. The partially purified extract exhibited proteolytic activity which was confirmed by caseinolytic assay and zymography. The sample was named *Melia dubia* latex protease (MDLP). Furthermore, MDLP activity was determined under varying conditions of pH, incubation temperature, different substrates, incubation time, and presence of metal ions. The optimum pH and temperature for MDLP activity were recorded as 7.5 and 37 °C, respectively. MDLP was more specific to casein as a substrate over gelatin and bovine serum albumin (BSA). It was also identified that the protease activity is calcium dependent and inhibited by zinc ions. MDLP has been distinguished to be a cysteine protease as indicated by its inhibition with IAA. It is noteworthy that the cysteine protease of *Melia dubia* showed plasmin-like activity. To evaluate this ability, MDLP was investigated for its effect on plasma clot and blood clot, in a concentration-dependent manner. MDLP induced degradation of clot suggesting plasmin-like activity as it hydrolyses fibrin clot efficiently compared to trypsin. MDLP hydrolyzed blood clots,  $\alpha$ -chains and  $\beta$ -chains of partially cross-linked fibrin clot which implies that it has fibrinolytic activity with potentials as thrombolytic agents. This research work is the primary report on identifying a protease from latex of *Melia dubia* which possesses ethnopharmacological importance in clot hydrolysis and wound healing. Furthermore, purification and characterization are in progress.

**Keywords:** *Melia dubia*, Latex, Caseinolytic, Cysteine proteases, Fibrinolysis, Thrombolysis

<sup>#</sup>The study was financially supported by JSS Academy of Higher Education & Research, Mysuru

# POSTER PRESENTATIONS

## Evaluation of Efficacy of Synthesized Antibody-Drug Conjugate (Maytansinoid- Trastuzumab Monoclonal); A Lab-Scale Study <sup>#</sup>

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### Abstract:

**Aims:** HER2 is overexpressed in 20-25% of breast cancer cases and is responsible for more aggressive tumor behavior. Monoclonal antibodies such as trastuzumab can specifically bind to the targeted antigen on the surface of cancer cells and have been approved for the treatment of HER2-positive breast cancer. Kadcylo<sup>®</sup> is used for breast cancer patients; positive HER-2 receptors. Therefore, this receptor can be used in the treatment and control of breast cancer as targeted cancer therapies. Antibody-drug conjugates (ADCs) can be used that combine the antigen-targeting specificity of monoclonal antibodies with the cytotoxicity of chemotherapeutic drugs. The main purpose of our project is Synthesis SMCC as a linker and conjugate trastuzumab to DM1 through SMCC as antibody-drug conjugate. **Method:** The ADC was synthesized by conjugating trastuzumab to maytansinoid. SMCC was synthesized in five different steps and compounds at each step were analyzed by Infrared Spectroscopy. The structure of the final product was determined by NMR. DM1 is attached to SMCC in chloroform solvent and purified by recrystallization. Antibody purification was performed by chromatography and bound to SMCC-DM1. SMCC was obtained with 75.8% yield and melting point at 187-189 ° C. Conjugation of DM1 with SMCC occurred in Acetonitrile. Cytotoxic effects and anti-proliferative activities of various concentrations of synthesized ADC (20, 30, 40, and 50 µg/ml) on breast cancer (SK-BR-3; HER2+, MDA-MB-231; HER2-) cell lines were determined by MTT and LDH (Lactate dehydrogenase) assay. **Findings & Results:** Antibodies with the concentration of 10 mg/ml and SMCC-DM1 with the concentration of 20 mg/ml had the best results in terms of drug-bound antibody production. The Kadcylo<sup>®</sup> and synthesized ADC have marked higher anti-proliferative effects on SK-BR-3; HER2 + cell line than trastuzumab. Although, neither synthesized conjugate, Kadcylo<sup>®</sup> nor trastuzumab has presented toxicity effects on the MDA-MB-231; HER2- cell line. Because of the results of apoptosis and release of lactate dehydrogenase in cells, a significant difference between synthesized conjugate and trastuzumab antibodies has been shown. **Conclusion:** Based on collected data, the synthesized conjugate expressed greater apoptotic and anti-proliferative activity than trastuzumab. Due to realized activities of our synthesized conjugate, can be considered as a potential compound used against breast cancer.

**Keywords:** antibody-drug conjugates, maytansinoid, trastuzumab, human epidermal growth factor receptor 2 (HER2), breast cancer

<sup>#</sup> All staff of Motamed Cancer Institute are highly appreciated.

## Bacterial diversity in water from Lai Nullah contaminated with household sewage and industrial waste

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### Abstract:

The effect of environmental pollutants on living organisms can be assessed by studying the changes in the indigenous microbial community. Therefore, in this study, cultivatable bacterial community in non-polluted as well as household sewage and industrially polluted water of Lai Nullah flowing through Islamabad and Rawalpindi, Pakistan was analyzed. Bacterial community composition and population present in the polluted water were significantly different from the non-polluted water ( $P < 0.05$ ). Sequence analysis of bacterial 16S rRNA gene revealed that *Citrobacter freundii*, *Klebsiella pneumoniae*, *Escherichia coli*, *Lactobacillus plantarum*, and various other bacterial species were specific to the polluted water. On the other hand, *Aeromonas veronii*, *Exiguobacterium* sp., and *Lysinibacillus macroides* were only found in the non-polluted water. Among measured physicochemical parameters, higher colony count in the polluted water was best correlated with higher biological oxygen demand, phosphate, sodium, and chloride values (Spearman's  $\rho = 0.85$ ). Concentration of heavy metals such as cadmium, chromium, copper, nickel, and lead were below  $0.03 \mu\text{g}\cdot\text{mL}^{-1}$  at all the study sites. During plate assay, bacterial strains found at polluted sites showed resistance to selected heavy metals with highest minimum inhibitory concentration for lead ( $8 \text{ mmol}\cdot\text{L}^{-1}$ ) followed by copper ( $5 \text{ mmol}\cdot\text{L}^{-1}$ ), nickel ( $3 \text{ mmol}\cdot\text{L}^{-1}$ ), and cadmium ( $1 \text{ mmol}\cdot\text{L}^{-1}$ ). All the bacterial isolates also showed various levels of resistance against antibiotics ampicillin, tetracycline, ciprofloxacin, and vancomycin using broth microdilution method. Current research provides new insight into the effect of household sewage and the industrially polluted water of Lai Nullah on the indigenous bacteria.

**Keywords:** Waste water, physicochemical parameters, Heavy metals, Minimal inhibitory concentration, Bacterial diversity

## Evaluation of Flavonoids as Potential Inhibitors of SARS-CoV-2: A Computational Approach for Drug Discovery

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### Abstract:

COVID-19, which is caused by SARS-CoV-2, is a global health emergency that demands a safe and effective therapy. The SARS-CoV-2 life cycle enzymes, RNA-dependent RNA polymerase (RdRp) and main protease ( $M^{pro}$ ) are considered viable therapeutic targets. Using a computational technique, fourteen (14) flavonoids from honey were evaluated for their ability to inhibit RdRp and  $M^{pro}$  in the current study. First, flavonoids were assessed for drug-likeness, which identified all compounds as orally accessible medicines with high permeability and easy absorption, except epigallocatechin gallate which was not considered for further analysis. Thirteen (13) screened flavonoids were then analyzed using the molecular docking study to find the most potent inhibitors of SARS-CoV-2 target proteins (RdRp and  $M^{pro}$ ). All compounds depicted the strong binding affinities with both target proteins, according to the study. With the RdRp, luteolin had the highest stable binding interactions with the energy value of  $-7.6$  kcal/mol while apigenin and kaempferol had binding energies of  $-7.8$  kcal/mol with  $M^{pro}$ . The low binding energies and stable interactions indicate that these honey flavonoids may potentially inhibit the SARS-CoV-2 target proteins which would lead to the blockage of viral life cycle. The toxicity analysis revealed that these top compounds are safe medications, and target prediction analysis showed their significant probability of target accuracy in the human body. Honey flavonoids are predicted to have anti-COVID-19 potential as safe medicines with good pharmacodynamic qualities and target precision, according to the present research. To study the usefulness of honey flavonoids in curing COVID-19, additional wet-lab investigations using *in vitro* and *in vivo* testing are suggested.

**Keywords:** SARS-CoV-2, COVID-19, honey flavonoids, *in silico*/ computational analysis, molecular docking.

## Studies On Bioaccumulation of Toxins in The Sediment and Fishes of River Ganges<sup>#</sup>

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### Abstract:

The river Ganges flows in the south-Asian region and supports the livelihood of one-third human population of India. Ganges has been the victim of unchecked and unplanned rapid urbanization, discharge of partially treated and untreated waste water, overcrowded religious bathing, and dumping of solid waste in and around the river. This has resulted in severe deterioration of ecological health of the river. The present paper deals with the study related to occurrence and bioaccumulation of some organochlorine pesticides and heavy metals in the riverine sediment and the muscles of two cat fish species, viz., *Channa punctatus* and *Aorichthys aor* procured from Ganges at Allahabad. The levels of these toxicants were determined to find out the extent of contamination and accumulation in the aforesaid samples from Ganges. Samples of sediment, and fish *Channa punctatus* (*C.punctatus*) and *Aorichthys.aor* (*A.aor*) were collected bimonthly through the year from river Ganges at Allahabad, India. The order of annual accumulation of different pesticides in the two ecological compartments of aquatic ecosystem i.e., sediment and fish were found to be Hexachlorocyclohexane > Dichlorodiphenyltrichloroethane > Endosulphan > Heptachlor > aldrin > endrin. The accumulation of heavy metals in sediment and fish were found to be in the following order i.e., Zn > Pb > Cr > Cu > Cd. Acetylcholine esterase (AChE) is an important enzyme which helps a key process of nerve impulse transmission by catalyzing the hydrolysis of acetylcholine into acetyl Co-A and choline. The *in vivo* effects of subacute concentrations of toxicants were evaluated by treating fish with sublethal levels of toxicants for 96 hours and assaying the activity of acetylcholinesterase in the muscles of *C.punctatus* and *A.aor*. Both HCH and DDT were found to inhibit AChE in the fish muscle by 38-47%. In both the fish species HCH was found to inhibit AChE to a greater extent than DDT. The trend of % decrease in AChE activity by heavy metals in *C.punctatus* was Pb>Cd>Cr>Zn>Cu and *A.aor* was Pb>Cd>Zn>Cr>Cu. The results could be used as an indicator for better environmental management with special reference to the water quality and human health.

**Keywords:** organochlorine pesticides, heavy metals, toxicity, acetylcholinesterase (AChE)

<sup>#</sup> AG acknowledges the University Grants Commission-New Delhi for providing financial support in the form of a Research Fellowship. BS gratefully appreciates the support provided by the Department of Biochemistry of University of Allahabad and CIFRI-Allahabad for carrying out present research.

## Comparative evaluation of nutrient digestibility of agro-industrial waste by in-situ and artificial rumen method in buffalo

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### Abstract

Livestock sector always contribute significant role in nourishment and growth of world's population. But unluckily, due to over-crowding and urbanization, world is facing severe food shortage. Among livestock animals in Pakistan, buffalo is more important as it is native and reared majorly by Pakistan's population. Unfortunately, use of expensive conventional feed resources, lack of feeding standards and less information regarding digestible nutrient profile of indigenous feedstuffs (especially non-conventional feed resources) posing serious issues in buffalo production. These issues may result in the increment of feeding cost, wastage of nutrients and also responsible for environmental pollution as well. Present study was conducted to investigate the nutrient digestibility of citrus pulp, potato peels, mango seed kernel and mango peels by using in-vitro daisy incubator method and in-situ nylon bag method. Nutrient profile of these ingredients was determined by Weende and Van Soest analysis. Each sample was divided into four replicates and placed in Daisy incubator at 39°C and 6.8 pH for 48hrs and in buffalo rumen as well. Nutrient digestibility was determined by the difference in nutrient profile observed before and after incubation. Statistical data was analysed using the MIXED procedure of SAS software (SAS Institute, Inc. 2003). Results showed that all ingredients have good nutrient digestibility but citrus pulp showed higher nutrient digestibility followed by potato peels, mango seed kernel and mango peels. Comparison between in-vitro and in-situ methods showed that in-situ nylon bag technique had higher nutrient digestibility values than in-vitro daisy incubator method but at the same time, daisy incubator is economical and easy to use. However, further studies must be conducted to standardize their nutritive values by using these methods.

**Key words:** agro-industrial waste, buffalo, digestibility, daisy incubator, in-situ.

## Potential Of Use Of Essential Oils In Biological Control

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### Abstract:

Pest insects cause serious harm and loss to stored grain products worldwide, which is an extremely problem for the increasing world population. Unfortunately, many countries at this time choose to use synthetic chemicals to get rid of pests. Some synthetic chemical insecticides are persistent and damage the environment, including soil and groundwater contamination. Their long-term application disrupts natural biological balance and development of pest resistance. Moreover, synthetic chemicals are toxic to non-target organisms and pose a threat to human health if their concentrations exceed recommended limits. These problems have contributed to the need to develop alternative methods that utilize eco-friendly products. In recent years, essential oils (EOs) have been one of the most popular alternative methods of pest control. Plant EOs have been suggested as alternative sources for insect control products because some are selective, biodegrade to nontoxic products, and have lower effects on non-target organisms and the environment. Many plants EOs show acute toxicity, developmental disruption, repellency, and feeding deterrence against many insect species due to their complex mixtures of monoterpenoids and related phenols. EOs may have toxic properties in relation to pests or may interfere with insect growth and reproduction. They exhibit attractive, antifeedant, and repellent effects against insects. For example, basil and orange oils are characterized by strong toxicity towards adults of the maize weevil and the red flour beetle, similarly as EO from *Zanthoxylum rhoifolium* (Lam.) towards *Bemisia tabaci* (Gennadius). Eugenol,  $\alpha$ -terpineol, cinnamic acid, and their equal mixture caused hyperactivity followed by death in American cockroaches. On the other hand, different secondary metabolites affect digestive performance in insects through changes in enzyme activities. For example, EOs from garden thyme and lavender reduced the activity of digestive enzymes in the midgut of *Xanthogaleruca luteola* (Müller). Antioxidant insect enzymes, such as catalase (CAT), polyphenol oxidase (PPO), and peroxidase (POX) participate in the detoxification of reactive oxygen species (ROS) generated in response to plant allelochemicals (phenolics or quinines). The family *Asteraceae* were the research subjects of several studies as a potential source of biopesticides with insecticidal properties. EO of tansy contains bioactive compounds with antifungal, anthelmintic, and antibactericidal properties.

**Keywords:** Essential Oils, Pest Control, Synthetic Chemical, Biological control.

## Hesitancy and Barriers of Iraqi Medical Students Against COVID-19 Vaccine

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### Abstract:

COVID-19 pandemic has changed the world we know. After two years of the pandemic, vaccine development against the widely disseminated COVID-19 seems the only way to control the pandemic. However, hesitancy to take the vaccine or fear of vaccine administration is a serious challenge for full coverage of population immunity. Medical students' knowledge and education about the vaccine are important because they are future health providers. This study aims to determine the main factors and barriers affecting the acceptance of the vaccine and making a decision to be vaccinated. Method: This is a cross-sectional study carried out in four of the main medical universities in the middle of Iraq. Those are Kerbala college of medicine, Wareth Al-Anbiaa college of medicine, Al-Ameed medical college in Karbala governorate, and Jabir ibn Haiyan medical college in Al-Najaf governorate. The survey was achieved via an online questionnaire during December 2021 from 635 medical students. The survey questions were designed after extensive literature reviews to unveil the most important barriers that withheld students from taking the vaccine. Results: The study shows that about 95% of the participants were already vaccinated, 2/3 were females, more than half of participants were from governmental colleges, and less than 10% were smokers or had chronic illnesses. The main factor affecting the acceptance of vaccines is the probability of getting infected. The vaccination rate was significantly higher in those vulnerable to infection (96.3 %). The majority of the students, 50.4% (318 out of 635), believe that the vaccine was safe, and the vaccination rate was statistically significant in those groups (99.4%). Most of the students, 46.2% (293 out of 635), believe that the vaccine is effective against the infection of COVID-19. 44.6% of the student (286 out of 635) were sure that the vaccine does not have major complications. 41.2% (260 out of 635) of participants thought that the immunity acquired after getting COVID-19 infection is better than the immunity acquired by vaccination. The concept of vaccination is widely accepted among medical students, and there is raised awareness about how important to get vaccinated.

**Keywords:** COVID-19, vaccination, vaccine acceptance, vaccine hesitancy

## Functional Properties of The Citrus Family

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### Abstract:

Citrus fruits and juices are high in bioactive substances such as ascorbic acid, flavonoids, phenolic compounds, and pectins, all of which are essential for human nutrition. Citrus juices are widely accessible and consumed beverages in the United States and other countries. The chemical composition is related to various properties such as antioxidant, anti-inflammatory, anticancer, antibacterial activities and a potential usage in the food industry. Citrus fruits' flavor components, on the other hand, include oil from the peel's outer layer and condensate from concentrated juice manufacturing. Citrus peel essential oils are utilized as flavoring components in gelatins, ice cream, beverages, sweets, and marmalades in other agri-food items because to their antibacterial and anti-inflammatory characteristics, as well as the tastes of pharmaceuticals. It may also be used in the production of fragrances, cosmetics, and toilet soaps. Essential oils extracted from aromatic plants have a variety of biological properties, including antioxidant, anti-inflammatory, antibacterial, anxiolytic, and antifungal properties. Citrus peel essential oils, on the other hand, have been discovered to be used in a variety of pharmaceutical industries due to their antibacterial, antioxidant, antidiabetic, insect repellent, antimutagenic, and antiviral properties. Because the essential oil fraction obtained from Citrus spp. bark is rich in chemical components relevant to all these industries, it has received a lot of attention in recent years.

**Keywords:** citrus spp., citrus sinensis, lemon, antimicrobial

## The efficiency of rehabilitation for fractures of the distal humerus metaepiphysis fractures

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### Abstract:

The aim of the study - to improve the results of treatment of patients with distal humerus metaepiphysis fractures. Authors analyzed the results of operative and conservative treatment 194 patients aged 19-89 years (mean age  $50,2 \pm 1,3$  years) with the distal humerus metaepiphysis fractures. Male was – 75 (38,7%), female – 119 (61,3%). According to AO/ASIF classification the fracture was type A – 15 (7,7%); type B – 40 (20,7%); type C – 139 (71,6%). According to method of treatment all patients was divided on 2 groups (1 - operative and 2 - conservative treatment) and each group on 2 subgroups (basic and control). The 1 group (operative treatment) was 140 (72,2%) patients, 99 (70,7%) – basic subgroup and 41 (29,3%) control. The 2 group (conservative treatment) was 54 (27,8%) patients, 29 (53,7%) – basic subgroup and 25 (46,3%) control. The basic methods of treatment in 1 group was: osteosynthesis by pins in 10 (7,1%) patients, external fixation device - 10 (7,1%), osteosynthesis by screw - 17 (12,2%), combine osteosynthesis - 49 (35,0%) and osteosynthesis by plates - 54 (38,6%). The methods of treatment in 2 group was: cast immobilization in 43 (79,6%) patients and skeletal traction - 11 (20,4%). Method of combined osteosynthesis for the distal humerus metaepiphysis fractures is offered. Indications to the methods of treatment depending on the type of fracture are defined and dependence of the development of complications of treatment on duration of elbow joint immobilization is proved. Periods and approaches of restoration treatment are developed, the dependence of results of restoration treatment on the type of fractures and method of treatment is set. The average follow-up was  $39,0 \pm 0,8$  months (from 7 months to 6 years) after trauma. The average score according to the Mayo clinic scale was  $81,7 \pm 1,2$  points (from 45 to 100). Analyzing the results of treatment 194 patients with the distal humerus metaepiphysis fractures showed that application of the differentiated approaches of treatment positive results are got for 91,4% of patients, in comparison with 71,2% of the control subgroup ( $p < 0,001$ ), and the number of complications.

**Keywords:** distal humerus bone, elbow joint, fracture, conservative and operative methods of treatment, rehabilitation.

## Rehabilitation of the elderly patients with the fractures of distal metaepiphysis of the radial bone

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### Abstract:

The aim of the study is to improve the results of treatment of elderly patients with fractures of the distal metaepiphysis of the radial bone. The authors analyzed the results of operative and conservative treatment 128 patients aged 60-74 years (mean age  $67,2 \pm 1,2$  years) with fractures of the distal metaepiphysis of the radial bone. Male was – 17 (13,3%), female – 111 (86,7%). According to AO/ASIF classification the fracture was type A – 6 (4,7%); type B – 25 (19,5%); type C – 97 (75,8%). According to the method of treatment all patients were divided into 2 groups (1 - operative and 2 - conservative treatment) and each group into 2 subgroups (basic and control). The results of treatment were assessed using the DASH scale. Under the conditions of the experiment, due to the calculation of the relative modulus of elasticity, it was found that the specific density and discontinuity of the spongy bone tissue are significantly reduced in the area of 10 - 18 mm from the articular surface. It was found that the lowest values of the distribution of spongy bone tissue and cortical layer are observed in the segment of the styloid process. The average follow-up was  $49,3 \pm 0,7$  months (from 1 to 7 years) after trauma. The tendency of transition to more complex intra-articular fractures with an increasing average age of patients is revealed. Approaches to the treatment of patients of different age groups, including those caused by traumatic factors of varying intensity, have been developed. According to the results of treatment of 128 patients with fractures of the distal metaepiphysis of the radial bone using the proposed differentiated tactics of treatment and use of immobilization splint, which allowed to perform functional unloading of the radial wrist joint, positive results were obtained in 93,92% ( $p < 0,001$ ) of cases.

**Keywords:** distal radius fractures, wrist joint, elderly patient, rehabilitation, treatment.

## Synthesis, Biological Activity, and Molecular Docking Assessment of Some New Sulfonylated Tetrazole Derivatives

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### Abstract:

A series of sulfonylated tetrazole derivatives (1-12) was designed and calculated the bioactivity and physicochemical scores through online available software Molinspiration. The compounds were observed to be in the zone for active drug molecule as GPCR ligand (1, 2, 5, 6, and 12), Protease inhibitor (9, 10, and 11) and Enzyme Inhibitor (1 and 2), while some of them were lying under the moderately active zone. The compounds (1-12) were then synthesized from aldehyde and hydroxylamine hydrochloride to produce (*Z,Z*)-benzene-1,4-diylbis(*N*-hydroxymethanimine), that was refluxed with acetic anhydride to yield its nitrile, which on further reacting with sodium azide and Zinc bromide in water given rise to 5,5'-benzene-1,4-diylbis(1*H*-tetrazole), that was finally undergone sulfonylation to yield sulfonylated tetrazole derivatives. The structural confirmation of the synthesized sulfonylated tetrazole derivatives (1-12), was achieved through FT-IR, <sup>1</sup>H-NMR, <sup>13</sup>C-NMR, Elemental analyses and mass spectroscopy. The compounds (1-12) were then tested for antimicrobial therapeutic effects against the pathogens (*S. aureus*, *S. epidermidis*, *E. coli* and *P. mirabilis*) by disc diffusion protocol, the bacterial strains were cultured in Muller Hinton agar and poured to the Petri plate, the compounds were dissolved in DMSO to prepare the stock solution, the paper discs were dipped into the stock solutions and placed on to the agar in the Petri plate and the zone of inhibition was recorded. The compounds exhibited significant potential, while some of them were having better effects than 'Ciprofloxacin'. The compounds (1-12) were also tested for MTT assay against HepG2 cells, the findings portrayed that the derivatives possessed 92-98 % percent viability of cells @ 3.125 μmol/L, and found to be inversely proportional to the concentration. The compounds (1-12) were also studied for molecular docking using Autodock Tools-1.5.6 against GlcN-6P) and observed that all compounds possessed low binding energy and established many H-bonds with the residues in GlcN-6P.

**Keywords:** Tetrazole, Antimicrobial, MTT assay, Molecular docking

**Acknowledgement:** The author is highly thankful to the Dean & Vice Dean of College of Medicine Al-Dawadmi, and the research ethics committee College of Medicine Al-Dawadmi, Shaqra University Kingdom of Saudi Arabia for their kind cooperation to accomplish this study.

## Effects of Commercial Premix (BullFeed<sup>®</sup>) on Lipid Peroxidation and Non-Enzymatic Antioxidants After Transport in Beef Cattle

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### Abstract:

This study aimed to determine the effects of orally administered commercial liquid premix (BullFeed<sup>®</sup>) on lipid peroxidation and non-enzymatic antioxidants in transported beef cattle. In this study, 7±1 months old, 230±30 kg Black Angus beef cattle were used. Thirty beef cattle were randomly selected from 300 cattle which were transported to Iskenderun from Uruguay via 28-day shipping and from there to Polatli district of Ankara, Turkey in 12 hours with 60-capacity trucks. Randomly selected cattle were divided into two equal groups as transport and transport + premix with 15 cattle each. Blood samples were taken from the animals in each group on the 7th, 14th, and 21st-day following transportation, and malondialdehyde (MDA) and non-enzymatic antioxidants (Vitamin A, C, E, and β-carotene) levels were evaluated. Plasma MDA levels on the 7th-day and 14th-day decreased in the transport + premix group ( $p<0.05$ ), while the values of serum vitamin E increased ( $p<0.001$ ) when compared to the transport group. Plasma vitamin A and β-carotene levels on the 7-day increased in the transport + premix group compared to the transport group ( $p<0.05$ ). It was observed that serum vitamin C levels increased in the group transport + premix compared to the transport group on the 14th and 21st days ( $p<0.001$ ). Considering the MDA values and the antioxidant vitamin levels of beef cattle given the premix after transportation, it was concluded that the orally given liquid premix may have beneficial effects on the transported beef cattle.

**Keywords:** Beef Cattle, Lipid Peroxidation, Liquid Premix, Non-enzymatic Antioxidant, Transportation.

**Utilization of Free-Floating Macrophytes and Fertilizer Impact on Production of *Labeo rohita*, Feeding Preference and Growth Performance.**

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**Abstract**

Free-floating aquatic plant produce high-quality protein feed and enhance fish growth in fertilized fish ponds. In this study commercial feed was replaced with aquatic plants (Azolla and duckweed) to check its effect on fish growth and chemical composition of *Ctenopharyngodon Idella* (grass-carp). Experiment was conducted in Integrated Aquaculture Agriculture Unit, Department of Fisheries and Aquaculture, UVAS (31°1'0 N 73°50'60 E with an altitude of 186 meters). Ponds were fertilized with urea and single super phosphate. Growth of Azolla and duckweed species in nutrient-rich environment was assessed. After maximum growth, their covers of 0%, 25%, 50% were used for pond area that were stocked with grass carp (15.5 g) for 90 days. Concentrations of dissolved oxygen, pH, water conductivity, phosphate, and nitrate decreased as Azolla coverage increased up to 50%. Highest production rate of grass carp was observed with 25% Azolla cover ( $P < 0.05$ ). Azolla exhibited strongest growth and highest protein content in urea treated pond as compared to covered with duckweed. Both Azolla and duckweed resulted in 5 to 10% higher growth traits and feed efficiency as compared to control. This was for first time that potential of Azolla and duckweed feed for grass fry has been demonstrated.

**Key words:** Aquatic plant, Azolla, Duckweed, *Ctenopharyngodon idella*.

## A Homozygous RAG1 Gene Mutation in a Case of Combined Immunodeficiency: Clinical, Molecular, and Computational Analysis

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### Abstract:

The recombination-activating gene 1 and 2 (RAG1/RAG2) proteins are essential to initiate the V(D)J recombination process, the result is a diverse repertoire of antigen receptor genes and the establishment of the adaptive immunity. RAG1 mutations can lead to multiple forms of combined immunodeficiency. In this report, whole exome sequencing was performed in a Moroccan child suffering from combined immunodeficiency, with T and B lymphopenia, autoimmune hemolytic anemia, and cytomegalovirus (CMV) infection. After filtering data and Sanger sequencing validation, one homozygous mutation c.2446G>A (p.Gly816Arg) was identified in the RAG1 gene. This finding expands the spectrum of immunological and genetic profiles linked to RAG1 mutation, it also illustrates the necessity to consider RAG1 immunodeficiency in the presence of autoimmune hemolytic anemia and CMV infection, even assuming the immunological phenotype appears more or less normal. Establishing a fast and accurate diagnosis is essential for these patients to survive and have a normal life by adopting a treatment with immediate curative hematopoietic stem cell transplantation rather than insufficient antibiotic therapy and immunoglobulin replacement.

**Keywords:** CMV infection; combined immunodeficiency; morocco; mutation; RAG1 gene.

## Proteomic Analysis And Identification Of Allergens In *Anisakis simplex*, *Pseudoterranova decipiens*, And *Contracaecum osculatum* L3 Larvae

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### Abstract:

*Anisakis simplex*, *Pseudoterranova decipiens*, and *Contracaecum osculatum* third-stage larvae (L3) are fish-borne nematodes that can cause human anisakidosis. Although *A. simplex* is a known source of allergens, knowledge about the allergic potential of *P. decipiens* and *C. osculatum* is limited. Therefore, we performed comparative proteomic profiling of *A. simplex*, *P. decipiens*, and *C. osculatum* L3 larvae using liquid chromatography–tandem mass spectrometry. In total, 645, 397, and 261 proteins were detected in *A. simplex*, *P. decipiens*, and *C. osculatum* L3 larvae, respectively. Western blot analysis confirmed the cross-reactivity of anti-*A. simplex* immunoglobulin (Ig)G antibodies with protein extracts from *P. decipiens* and *C. osculatum* L3 larvae. The identified proteins of the Anisakidae proteomes were characterized by functional analysis, and proteins involved in many essential biological mechanisms, such as parasite survival, were identified. In the proteome of *A. simplex* 14, the following allergens were identified: Ani s 1, Ani s 2 (2 isomers), Ani s 3 (2 isomers), Ani s 4, Ani s 8, Ani s 9, Ani s 10, Ani s 11-like, Ani s 13, Ani s fructose 1,6-bisphosphatase, Ani s phosphatidylethanolamine-binding protein (PEPB), and Thu a 3.0101. The following 8 allergens were detected in *P. decipiens*: Ani s 2, Ani s 3 (2 isomers), Ani s 5, Ani s 8, Ani s 9, Ani s PEPB, and Ani s troponin. In *C. osculatum* 4, the following allergens were identified: Ani s 2, Ani s 5, Ani s 13, and Asc l 3. Furthermore, 28 probable allergens were predicted in *A. simplex* and *P. decipiens*, whereas in *C. osculatum*, 25 possible allergens were identified. Among the putative allergens, heat shock proteins were most frequently detected, followed by paramyosin, peptidyl-prolyl cis-trans isomerase, enolase, and tropomyosin. We provide a new proteomic data set that could be beneficial for the discovery of biomarkers or drug target candidates. Furthermore, our findings showed that in addition to *A. simplex*, *P. decipiens* and *C. osculatum* should also be considered as potential sources of allergens that could lead to IgE-mediated hypersensitivity.

**Keywords:** allergen, *Anisaks*, *Contracaecum*, proteomics, *Pseudoterranova*

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## A role model organism for neurological disorders: Honeybees

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### Abstract:

Insects have been used as role models in many studies throughout the history. Honeybee is perhaps the most studied of these insects and used as a role model, as well. They particularly intrigued researchers with their robust capacity of learning and using sensory information since Aristotle. Regardless of how small brain honeybees have, they exert many scientific advantages. They are preferred to see the neurologic effects since they have rich behavior repertoire, fully sequenced genome, and relatively simple nervous system. Relating to the above-mentioned factors, honeybees can exhibit the capability of learning and memory for local cues around the place of interest, such as food sources and hive. In addition to that, the relative simplicity of the nervous system of honeybees provides an easy access to understand the nature of the cognitive complexity. These features make them true candidate for investigating the neurological disorders. This review aims to provide thorough knowledge about the general idea of the honeybee model in neurological research and future directions in which this topic will take us.

**Keywords:** honeybee, neurological disorders, schizophrenia, autism.

## Detection Of New Delhi Metallo-Beta-Lactamase-1 (NDM-1) In Carbapenem Resistant *E.Coli* From Various Clinical Samples.

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### Abstract:

Carbapenemases are diverse enzymes that vary in their ability to hydrolyze carbapenems and other beta-lactams. Detection of carbapenemase is a crucial infection control issue because they are often associated with extensive antibiotic resistance, treatment failures and infection-associated mortality. Among the beta-lactamases, the carbapenemases, especially transferrable metallo-beta-lactamases (MBLs) are the most feared because of their ability to hydrolyze virtually all drugs in that class, including the carbapenems. Currently, the bacteria receiving the most attention is New Delhi metallo-beta-lactamase-1 (NDM-1) producing superbug that confers resistance to most antibiotics including carbapenems. *NDM-1* has been increasingly isolated from *K.pneumoniae*, *E.coli*, *C.freundii*, *Morganella morgagnii*, *Providentia spp*, *Enterobacter cloacae*. An attempt was made to know the rate of carbapenem resistance in *E.coli* from various clinical samples and NDM-1 gene detected. *Isolates:* Phenotypically confirmed ESBL *E.coli* from samples such as urine, pus, ET samples, sputum and other respiratory samples; except faeces were included in the study. Antimicrobial susceptibility testing was done by Kirby Bauer's disc diffusion on Muller Hinton Agar according to CLSI guidelines. MBL production was detected Modified Hodge Test and Disc Diffusion Synergy Test. *NDM-1* gene was detected by conventional PCR. Out of 100 ESBL *E.coli* isolates tested, we obtained 15% positivity with phenotypic test for MBL ESBL *E.coli* and 25% positivity with genotypic test for NDM-1. Sensitivity of phenotypic test for MBL is 71% and Specificity of test is 99%. *NDM-1* producing strains appear to be an emerging worldwide problem. Based on our findings, we conclude that genotypic assay could be considered in the diagnostic workflow as confirmatory method for carbapenemase production and/or as an identification tool for the most important different carbapenemase genes. When the presence of a carbapenemase is suspected, PCR is the fastest way to determine which family of  $\beta$ -lactamase is present. Hence timely detection of *NDM-1* would help in timely institution of appropriate antibiotic therapy.

**Key words:** Carbapenem resistance, NDM-1 gene, Metallo beta lactamases.

## Effects of Minocycline on Body Weight, Food Intake Tau Protein in Lipopolysaccharide Neuroinflammation Rat Model

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### Abstract:

Lipopolysaccharide (LPS) was used to induce neuroinflammation and amyloid accumulation. The effects of minocycline on body weight, food intake and Tau protein in LPS rats' model have not been elucidated. The aim of this study is to demonstrate the effects of minocycline on body weight, food intake and Tau protein level in comparison to clinically approved drug memantine. A total of fifty male SD rats were divided into: (i) control, (ii) LPS, (iii) LPS-treated with minocycline 25 mg/kg, (iv) LPS-treated with minocycline 50 mg/kg, and (v) LPS-treated with memantine 10 mg/kg. LPS was injected intraperitoneally once on day 5. Minocycline and memantine treatments were administered intraperitoneally once daily for 2 weeks. The weight of rats and food intake were measured daily using electronic balance. Enzyme linked immunosorbent assay (ELISA) was performed to measure Tau protein level in hippocampus and cortex. The results showed that LPS significantly decreased body weight, increased Tau protein level in comparison to control group ( $p < 0.05$ ). Minocycline treatment, dependent on dose, significantly increased body weight and reduced Tau protein level that was comparable to memantine effect ( $p < 0.05$ ). There were no significant changes in food intake ( $p > 0.05$ ) between all groups. Dependent on a dose, minocycline reduced weight loss and Tau protein formation induced by LPS injection. Thus, minocycline has potential preventive-therapeutic effects in neuroinflammatory diseases such as Alzheimer's disease.

**Keywords:** lipopolysaccharide, minocycline, body weight, food intake, Tau protein

This study was supported by Universiti Sains Malaysia research funding (RUI 1001/PPSK/8012269)

## Distribution Of Lungworms In Small Ruminants In The Kargi Region Of Corum

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### Abstract:

It is of great importance for farmers and veterinarians to assess the risk of disease against parasitic diseases locally, to prevent economic losses. This study was carried out to determine the prevalence of lungworm infections in small ruminants in the Kargi district of Corum province, which plays an important role in the region's economy. For this purpose, fecal samples were taken from a total of 81 sheep and 118 goats in 17 different locations, in accordance with the standard technique, between March 2021 and January 2022. Stool samples taken were placed in sample containers, labelled and brought to the laboratory. It was studied in the laboratory by the Baermann - Wetzel method. In goats, *Dictyocaulus filaria*, *Muellerius capillaris*, *Protostrongylus* spp., in sheep, *Dictyocaulus filaria*, *Cystocaulus ocreatus*, *Muellerius capillaris*, *Protostrongylus* spp. were detected. It was observed that 39 (48,1%) of 81 sheep and 77 (65,2%) of 118 goats were infected with lungworm larvae. While *M.capillaris* was the most common species (97,4%) in goats, *D.filaria* was the most common species (53,8%) in sheep. In sheep; 24 (61,5%) of the feces were infected with one species, 12 (30,7%) with two species, 3 (7,7%) with three species. It was determined that 76 (98,7%) of the feces were infected with one species and 2 (2,6%) with two species. Lungworm infection was highest in goats  $\geq 6$  years (100%), followed by  $\leq 2$  years (47,1%) and 3-5 years (21,6%). In sheep, it was highest in the age group  $\leq 2$  (71,4%), followed by  $\geq 6$  years (66,6%) and 3-5 years (25%).

**Keywords:** sheep, goat, lungworm

## Effect of *Saccharomyces cerevisiae* feed supplementation on haematology and reproductive parameters for Algerian rabbits

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### Abstract:

This study aims at investigating the effect of *Saccharomyces cerevisiae* (SC) supplementation on reproductive performance, haematological parameters and fertility of rabbits under Algerian conditions. The animals were divided into three groups and received the same feed ration during the experimental period. The control group received a basal diet without feed additives (Group#0) and the two yeast SC groups received 0.3 and 0.6 g/day per head (Group#1 and Group#2, respectively). Semen and blood samples were collected for determination of semen parameters and haematology. The weights of rabbits treated with SC 0.3 g/day were statistically significantly different ( $P < 0.05$ ) from the control groups and group treated with SC 0.6 g/day. There were significant differences between the treatment groups for (RBCs), haemoglobin (HGB), haematocrit (HCT) and mean corpuscular haemoglobin (MCH) values, with higher values in rabbits supplemented with SC 0.3 g/day and 0.6 g/day, compared to those in the control group. The scrotal diameter did not differ between the dietary treatments. When compared with the control group, feeding rabbits graded levels of SC resulted in an increase in the average semen volume, mass motility and individual motility at day 51 of the experiment. On the other hand, the sperm concentration was significantly lower ( $P < 0.05$ ) in rabbits supplemented with SC 0.3 g/day and 0.6 g/day during the two months compared to that in the control group. The spermatozoa mortality rate was lower for the rabbits supplemented with SC 0.3 g/day and 0.6 g/day (15.7% and 11.4%, respectively), compared to that in the control group (24%). This study has shown that inclusion of SC 0.3 g/day and 0.6 g/day in the diets of rabbit has positive effects on body weight and sperm analysis. Moreover, it increases the level (RBCs), haemoglobin (HGB), haematocrit (HCT) and mean corpuscular haemoglobin (MCH).

**Keywords:** *Saccharomyces cerevisiae*; feed; haematological parameters; sperm; rabbits.

## Blood Flow Restricted Training on Radius Distal End Fractures

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### Abstract:

Blood flow restriction training (BFRT) has proven to be effective to empower muscles. Most of research has shown that blood flow restriction has benefits on rehabilitation for bone fractures. The aim of our study was to investigate of the effects of blood flow restriction on radius distal end fractures. A literature overview was performed using Pedro, PubMed, and Cochrane databases. The main inclusion criteria for the papers were randomized controlled trials which included patients who have suffering distal radius end fracture. Any fracture of except radius fracture was not included. The initial search has shown that 264 articles have found. As a result, 2 articles included. One of studies was performed on radius fracture which had operated, and the other study was performed without surgery. The experimental studies were conducted blood flow restriction exercises had positive effect to decrease pain and to increase function of hand and wrist. According to analyzes of visual analog scale, patient rated wrist evaluation scores, disabilities of the arm shoulder and hand scores, wrist range of motion, grip strength and pinch strength, assessment values have shown that blood flow restriction training have advantages for the treatment. Consequently, blood flow restricted training has found to be able to have advantageous to treat radius distal end fracture rehabilitation. BFRT can be used additionally for the traditional rehabilitation program.

**Keywords:** blood flow restriction, radius, fracture, exercise

## Antibacterial Effect of *Nigella sativa* (L.) Essential Oil against Multidrug Resistant Pathogens Isolated from the Periodontal Pocket of Periodontitis Patients <sup>#</sup>

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### Abstract:

The main objective of this study was to evaluate the antibacterial activity of the essential oil (EO) of *Nigella sativa* seeds, harvested from Ghardia in Algeria, against pathogenic bacterial strains, the most isolated from periodontitis patients. The multidrug resistant *Streptococcus pneumoniae*, *Staphylococcus aureus* and *Veillonella sp* were isolated and identified from the oral cavity and the periodontal pocket of patients with periodontal diseases. The EO was extracted using the steam distillation process and the antimicrobial effect was tested by both agar disc diffusion and microdilution methods. The isolation of EO has done an extraction yield of 0.26% for 30g of *N. sativa* seeds. Moreover, results of the antimicrobial tests showed that EO of this plant exerted a higher antimicrobial activity against Gram positive bacteria than Gram negative bacteria. *S. pneumoniae* and *S. aureus* were the most sensitive strains with diameters of bacterial growth inhibition zones of 55 mm and 20 mm, respectively, and 14 mm against *Veillonella sp*, using a concentration of 33 mg/mL EO. Also, *N. sativa* seeds EO exhibited a very interesting antimicrobial effect, estimated quantitatively, regarding their lower minimum inhibitory and bactericidal concentrations, of 33 mg/mL for *S. aureus* and *Veillonella sp* and 16.5 mg/mL against *S. pneumoniae*. These results have enabled us to prove the use of essential oil of *Nigella sativa* L. in the medical field that could be recommended as a preventive measure to preserve from tooth decay and in treatment of periodontal diseases.

**Keywords:** *Nigella sativa*, essential oil, antibacterial effect, periodontitis.

## The Value of Some Blood Indices Among COVID-19 Infected Women

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### Abstract:

Coronavirus disease-2019 (COVID-19) is caused by Coronavirus-2 (SARS-CoV-2) is regarded as a worldwide health challenge. Although most patients are asymptomatic or have mild to moderate respiratory tract infections, they can develop severe illnesses. This study aimed to assess the incidence, clinical features, and laboratory outcomes of COVID-19 during pregnancy in the Iraqi populace. A prospective cohort study enrolled 50 confirmed patients with COVID-19 collected from the 1st May 2020 until May 2021, then classified into two categorized groups according to the pregnancy status; Group 1 (25/50 pregnant patients) and Group 2 (25/50 non-pregnant patients). The analyses of data adjusted according to demographic and pregnancy symptoms with the appearance of co-morbidities as we assessed their clinical symptoms, hematological, and biochemical tests (complete blood picture (CBC), white blood cells (WBC), neutrophils, lymphocytes, platelets, D-dimer, Alanine transaminase, and Aspartate aminotransferase. Both groups were matched by age and body mass index (BMI); patients with severe pneumonia were excluded from this study to avoid bias by their extreme blood indices changes. The analysis of 50 women (25 pregnant and 25 non-pregnant) diagnosed with COVID-19 showed that; symptomatic pregnant women were admitted to the hospital earlier than non-pregnant women and they were delivered by cesarian section. The laboratory tests reported significantly higher inflammatory markers like WBC, neutrophil count and percentage, C-reactive protein, and D-dimer in Group 1 with P-value <0.001, while there was a significantly low lymphocyte count in comparison to Group 2 as P-value <0.001. In conclusion, there were individualized clinical characteristics in an association of laboratory results of COVID-19 among the pregnant group in contrast to the non-pregnant group. The CBC; blood indices are quick, readily available, and do not impose extra charges on patients. These could guide the clinical decision in predicting the severity and the prognosis of provided treatment to seropositive pregnant women. Therefore, we recommend its implication in practice.

**Keywords:** COVID-19, blood indices, pregnancy, non-pregnant

## Gene Expression Profile of MTOR Regulated Translation Processes at Aging and Longevity<sup>#</sup>

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### Abstract:

Longevity is a highly adaptive phenotype, which is based on the balance of evolutionarily conserved signaling pathways controlling a wide range of biological processes. One of the key regulators of multiple cellular processes is mTOR signaling. Downstream effectors of mTOR-pathway control ribosome biogenesis, protein translation, autophagy, nucleotide biogenesis and others. They are involved in cellular processes associated with the development of diseases that limit lifespan and, in general, with aging and longevity. The aim of the study was to assess the expression level of genes encoded the translational stages of the mTOR-pathway at different stages of human ontogenesis. The study group consisted of 130 healthy individuals in age 22 to 100 years old. Transcription analysis (TA) of *EIF4B*, *EIF4E*, *EIF4EBP1*, *EIF4EBP2*, *PPP2CA*, *PPP2R2B*, *PPP2R4*, *RPS6*, *RPS6KA1*, *RPS6KA2*, *RPS6KA5*, *RPS6KB1*, *RPS6KB2* genes was detected by RT-PCR.  $\Delta\Delta C_t$ -method was applied to analyze gene TA. Comparative analysis of the gene TA was performed among middle-age persons (22-60 years old), seniors (80-89 years old) and long-livers (90-100 years old). We found that expression levels of translation initiation factors eIF genes (*EIF4E*, *EIF4B*), the ribosomal protein S6 gene (*RPS6*) and kinase S6K1 gene (*RPS6KB1*) were down-regulated among the seniors compared to middle-age persons ( $P < 0.05$ ). Among long-livers the TA of studied genes were similar those in control group of middle-age persons; the expression levels of eIF genes (*EIF4E*, *EIF4EBP2*), *RPS6KA2* and protein phosphatase 2 gene (*PPP2R2B*) were up-regulated compared to seniors. Thus, expression of downstream effectors of mTOR-pathway genes was progressively decreased with age, but not among long-livers. This suggests that attenuation of protein biosynthesis occurs in aging; it is important to maintain the activity of the biosynthetic processes for longevity.

**Keywords:** longevity, aging, gene expression, mTOR-signaling.

<sup>#</sup> Funding: Megagrant by the Government of Russian Federation (075-15-2021-595). Partial financial support for research by the Ministry of Higher Education and Science of the Russian Federation (AAAA-A21-121011990119-1).

## Theoretical principles of making a network of river corridors in Ukraine

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### Abstract:

Ecological corridors are spatial, elongated structures that connect natural nuclei and include existing biodiversity of varying degrees of naturalness and habitat, as well as areas to be renaturalized. Their main function is to ensure the maintenance of reproduction processes, gene pool exchange, species migration, distribution of species to adjacent territories, their experience of adverse conditions, concealment, maintenance of ecological balance. An important type of eco-corridors are water bodies (sea coastal waters, rivers, lakes, estuaries, artificial reservoirs - canals, reservoirs, ponds), wetlands, water protection zones, coastal protection strips, drainage strips, sanitary protection zones. They are often part of national, regional and local ecological networks. River valleys still play a significant role in Ukraine in preserving biological and landscape diversity. The lands of river valleys, which used to be quite often classified as "lands", were and are unpromising for active management. However, they are often forgotten for their exceptional value for the protection of surface and groundwater, protection of soils as breeding grounds for wild animals, as the last habitats of endangered plants. Therefore, these natural oases often disappeared due to land reclamation, not always rational afforestation, mining, overgrazing and littering, turning over time into eroded, polluted, impoverished in terms of land biodiversity. At the same time, according to ecologists, it is the valleys of small and medium rivers that have the greatest potential in preserving the ecological balance of the territory.

**Keywords:** eco-corridors, river corridors, biodiversity.

## Vitamin E in Cyclodextrin-in Liposomes Formulation for Sperm Cryoprotection

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### Abstract:

Vitamin E (Vit E) is a lipid-soluble vitamin that is divided into two types: tocopherols and tocotrienols. Although Vit E is widely known as a potent antioxidant, which protects lipids and membranes from oxidative damage in vitro and in vivo. The aim of this study was to enhance the solubility of vitamin E using the double loaded in liposome (DCL). We examined the efficacies of these formulations against sperm cryodamage. The DCL formulation were prepared by ethanol injection method using phospholipid 90H, cholesterol, and Vit E or/and cyclodextrins/Vit E complexes. The prepared formulations were characterized for size and entrapment efficiency. The semen was treated with deferent supplementations (Vit E, cyclodextrins, liposome and DCL system), motility parameters were evaluated by a computer assisted semen analyzer system (CASA) before and after chilling. The optimal sperm protection was significantly improved in Vit E in cyclodextrin-in liposome. In conclusion, the current results showed the interest of the double loaded in liposome preparation as an alternative to vitamin E solubility enhancement and to protect spermatozoa during cryopreservation.

**Keywords:** vitamin E, cyclodextrins-in liposomes, sperm motility, cryopreservation.

## Water Quality for Irrigation

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### Abstract:

Irrigation water quality has been a burning issue for a long time. Agronomists, entrepreneurs, farmers and others have long monitored the chemical and microbiological composition of the water used for irrigation. In doing so, they resort to the cleanest and most convenient sources of water resources - groundwater. The aim of our research is to consider other natural water resources as sources for irrigation and methods for assessing their quality. According to the result, one of the most obvious sources for irrigation (other than groundwater) is surface water - rivers and lakes. But in this case, we are faced with the issue of their quality. The presence of a large amount of heavy metals (Pb, Zn, Mn, Cd, Ni, Co, Hg, As), pathogenic microorganisms and exceeding the number of boundary permissible concentrations of chemical elements can cause irreparable harm not only to agricultural crops, but also subsequently to animals and humans. To prevent negative impacts, it is necessary to carry out a preliminary assessment of the quality of water resources. The most common and effective methods can be: WQI (Water Quality Index), WPI (Water Pollution Index), Harrington function,  $I_E$  (Ecological Index), WSq (Water Scarcity by sector). By combining them individually or using them together, you can achieve the most accurate assessment of the quality of surface water for irrigation. No sum up, provided that the quality of surface water does not exceed the boundary of permissible concentrations, they can be used as an excellent substitute for groundwater. Thus, there will be more resources for irrigation, their use is easier, and the quality will not be questioned.

**Key words:** water pollution, irrigation, water quality index.

## New record of three feather mites (Acariformes: Astigmata) from Turkey<sup>#</sup>

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### Abstract:

Feather mites (Astigmata: Analgoidea and Pterolichoidea) are obligate parasitic or commensal ectosymbionts permanently living on birds and characterized by a high host specificity. All these mites can be referred to four morpho-ecological groups based on microhabitats occupied on hosts and morphological adaptations to them: wing and tail feather mites, contour and downy feather mites, quill mites, and skin mites. To date, over 2500 species of feather mites have been described. Although Turkey has a rich ornithofauna with nearly 500 resident and migratory species, a limited number of studies of feather mites have been conducted so far and reported only 42 species. In our opinion, a relatively limited knowledge of feather mite diversity in Turkey can be explained by insufficient attention to this group of mites, because these mites do not cause serious health problems on the host compared to other parasitic groups, difficulties in field and laboratory studies of them, and lack of collaboration between researchers. Birds specimens representing five species, found dead during ornithological studies in natural areas in the Samsun province, were examined in the Parasitology Laboratory, Faculty of Veterinary Medicine, Ondokuz Mayıs University (Samsun, Turkey). The examination has shown that these avian hosts were infested with feather mites: the Eurasian blue tit *Cyanistes caeruleus* (Linnaeus, 1758) – by *Proctophyllodes stylifer* (Proctophyllodidae), European Robin *Erithacus rubecula* (Linnaeus, 1758) – by *P. rubeculinus* (Proctophyllodidae), Great Crested Grebe *Podiceps cristatus* – by *Ptiloxenus major* (Ptiloxenidae), Honey Buzzard *Pernis apivorus* (Linnaeus, 1758) – by *Hieracolichus ramosus* (Gabuciniidae), Yellow-legged Gull *Larus michahellis* (J. F. Naumann, 1840) – by *Alloptes obtusolobus* (Alloptidae) and *Zachvatkinia larica* (Avenzoariidae), and Common Chaffinch *Fringilla coelebs* (Linnaeus, 1758) – by *Analgae passerines* (Analgidae), *Monojoubertia microphylla* (Proctophyllodidae) and *Pteronyssoides striatus* (Pteronyssidae). Among nine mite species detected in the present study, *Alloptes obtusolobus*, *Hieracolichus ramosus* and *Zachvatkinia larica*, are reported first time in Turkey.

**Keywords:** *Alloptes obtusolobus*, feather mites, *Hieracolichus ramosus*, *Zachvatkinia larica*

<sup>#</sup> The authors are grateful to Dr. Sergey V. Mironov (Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia) who supported the identification of the feather mites.

## The Major Role of Superoxide Dismutase Genes in the Complex Genetic Markers of Human Longevity<sup>#</sup>

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### Abstract:

Healthy longevity is actual goal of modern society because of total increase of lifespan and an expansion of the elderly subgroup in the world population. Probably, adaptation biological mechanisms of long-lived persons provide a physiologically slow progressive character of aging. The multifactorial nature of longevity suggests the presence of the complex genetic markers necessary for the formation of this high-adaptive phenotype. The purpose of our study was the identification of complex genetic markers of longevity in antioxidant defense genes. The total group was complete of 2511 unrelated persons in age from 18 to 109 years old belonging to three ethnic groups – Russians, Bashkirs and Tatars, residents of the Republic of Bashkortostan (Russia). The DNA was isolated from 8 mL of whole venous blood by phenol-chloroform extraction. Allelic variants of the polymorphic markers in 20 antioxidant defense genes were identified by RT-PCR using TaqMan probes. The search for multilocus markers was performed in the APSampler program (V.3.6.1). We identified 116 multilocus patterns that positively related with longevity, and 53 complex markers are counteracting this phenotype. It was found the prevalence of superoxide dismutase genes polymorphic loci among allele/genotype combinations with the most pronounced statistical indicators ( $OR > 4$ ,  $P_{cor} < 0.01$ ) in all studied ethnic groups. Among Russian these are *HIF1A* rs11549465\*C+*MSRA* rs10098474\*T+*SOD1* rs2070424\*A/A ( $OR=5.2$ ,  $P_{cor}=0.006$ ) and *MSRA* rs10098474\*T+*SOD1* rs2070424\*A/A ( $OR=4.86$ ,  $P_{cor}=0.012$ ) combinations, among Tatars – *GSTP1* rs1695\*A+*SOD1* rs2070424\*A+*SOD2* rs4880\*C/T ( $OR=3.5$ ,  $P_{cor}=2.93 \times 10^{-9}$ ), *GSTP1* rs1695\*A+*GSR* rs1002149\*G ( $OR=4.84$ ,  $P_{cor}=4.04 \times 10^{-9}$ ) combinations, and among Bashkir – *PON2* rs7493\*C+*SOD1* rs2070424\*A/A ( $OR=6.31$ ,  $P_{cor}=0.014$ ), *HIF1A* rs11549465\*T+*PON2* rs7493\*G+*SOD1* rs2070424\*A+*SOD2* rs4880\*T ( $OR=6.4$ ,  $P_{cor}=0.013$ ) combinations. These alleles of *SOD1* and *SOD2* genes are associated with higher levels of hydrogen peroxide in cells. It is likely that this compound may have some protective effect in the aged phenotype conditions and may play an important role in the lifespan control.

**Keywords:** longevity, superoxide dismutase, multilocus marker

<sup>#</sup>The study was supported by the Megagrant by the Government of Russian Federation (075-15-2021-595).

### ***Tritrichomonas foetus*: a study of prevalence in cats from Poland**

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#### **Abstract:**

*Tritrichomonas foetus* is the causative agent of feline trichomonosis, a large-bowel disease resulting in chronic diarrhea. Feline trichomonosis has been reported in cats of both pure and non-breed and in both males and females worldwide. Molecular methods were adapted for the *T. foetus* identification, and among them, PCR according Felleisein, and also new developed method: loop-mediated isothermal amplification (LAMP). The aim of this study was to determine the prevalence of *T. foetus* infection in selected populations of cats in Poland using the molecular tools. A total of 117 freshly voided feline fecal samples from cats from the area of Poland were collected for the study. All samples were examined by PCR according to Felleisein (Felleisein et al., 1998) and our own method LAMP (Dąbrowska et al., 2019). The statistical analysis was performed using Statistica v10 (StatSoft Inc., Tulsa, OK, USA). The prevalence of feline tritrichomonosis was 20.51%, and statistically significant differences were obtained between groups of animals regarding age, breed, number of cats, diarrhea, and place of living. In conclusion, our survey demonstrates the presence of *T. foetus* in cat populations from Poland.

**Keywords:** cats, trichomonosis, molecular tests, prevalence, PCR, LAMP

This research was supported by statutory funds (project no. S/376) of the National Veterinary Research Institute in Puławy, Poland.

## Clinical Infections Of A Resistance *MORGANELLA* Strains Isolated From University Hospital Centre Of Constantine.

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### Abstract:

*Morganella* species was reported as an infrequent causes of disease in healthy individuals but lastely, and due to it frequently association to the urinary infections in humans it become one of the most opportunist highly isolated in clinic. Antibiotic resistance rates of *Morganella* strains have increased globally and showed a varying resistance profiles. With some infections, this bacterium often results in a high mortality rate in patients and considered as a non-negligent opportunistic pathogen with high levels of resistance and virulence. In this study, we aim to keep under surveillance the evolution of antibiotic resistance and the epidemiological status of *Morganella* strains also to describe the epidemiological aspects of this strains in Algeria. Our study was performed in the Microbiology Laboratory of Ben Badis University Hospital in Constantine between September 2018-Mars 2019. Several samples of patients hospitalized and non-hospitalized served for study. The identification of bacterial isolates and the relative antibiogram are carried out by conventional methods and the resistance phenotypes are determined according to the recommendations of the CLSI; Seventeen antibiotics were tested. During our study, 40 species of *Morganella morganii* were isolate from various samples, pus (72.5%), urine (15%), blood (10%), peritoneal liquid (2.5%) respectively. 52.5% of our species came from the internal medicine department with a male predominance in 82.5%. The rate of extended spectrum  $\beta$ -lactamase (ESBL) producing strains was important 42.5%, we also found that resistance rate to carbapenem was high and arrived to 47.5%. In this study we summarized the epidemiology of *Morganella* strains as a non-negligent opportunistic pathogen due to the increased levels of resistance and virulence.

**Keywords:** phenotypes, opportunistic pathogen, antibiotic resistance , infections .

## Dental plaque and systemic diseases. Natural prophylaxis - propolis, diet rich in polyphenols.

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### Abstract:

Current scientific reports tend to suggest that cariogenic bacteria may severely strongly influence the course of SARS-CoV-2 infection and increase risk of severe COVID-19 complications. Biofilm maturation is connected with a progressive shift from Gram-positive to Gram-negative anaerobic species destruction of tooth-supporting apparatus, finally leading to periodontitis. Chronic gingivitis and periodontitis has been associated with a number of other systemic diseases including diabetes mellitus, cardiovascular disease, oral and colorectal cancer, gastrointestinal diseases, respiratory tract infection and pneumonia, Alzheimer's disease, rheumatoid arthritis, low birth weight and perinatal mortality, and recently, constituting a high risk for developing severe illness due to SARS-CoV-2 infection. Among many proven methods of reducing of dental plaque formation apitherapeutic method based on the implementation of propolis could be particularly useful agent in decreasing the accumulation of dental plaque. Moreover, a diet rich in polyphenols prevents cariogenic bacteria and reduces the accumulation of dental plaque. Therefore, propolis and diet rich in polyphenols may play an important role in prophylaxis of systemic diseases which are highly connected with oral hygiene and can bring advantages in maintaining general health.

**Keywords:** dental plaque, systemic diseases, propolis, polyphenols, diet

## **Food Safety Risk Management Systems in SME Implementation and Auditing - Explanations and procedures to ensure effective implementation.**

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### **Abstract:**

An introductory description is given of how products and also the reputation of a company suffers if the health of consumers would be adversely affected. It is therefore the top priority to protect against health hazards and potentially hazardous foods. The aim of the poster presentation is to explain how the quality of products not only depends on the nutritional value and the overall sensory impression, but above all on the absence of pollutants, foreign bodies and its microbiological composition and their verification by means of audits. The Poster show how different the design of Food Safety Risk Management System can be as a preventive concept to ensure food safety. This can be done less by random final checks, but rather by preventive industrial hygiene measures. It is shown how the Food Safety Risk Management System concept is based on scientific literature and technically reliable information on the products and processes used. The results of audits to fulfill the requirements is discussed. As method it will analyze the way proposed by the Codex Alimentarius to carry out the hazard analysis and the use of a decision tree is to be regarded as a guide and can be used flexibly. One focus of the article should be on the hazard analysis, which first evaluates known hazards from the products, taking consumer groups into account. In a second step, the hazards that could have their starting point in the raw materials are to be evaluated and, if necessary, the influence of the individual process steps in the manufacturing process on these named hazards is to be considered using the decision tree. In result and summary, the evaluation of possible relevant hazards in the operational manufacturing process, which should actually be controlled by good manufacturing practice or reduced to an acceptable level, with the help of a decision tree can lead to incorrect evaluations because only partial aspects are considered and the view to the actual relevant hazards of the end products is lost.

**Keywords:** Food Safety Risk Management Systems, SME, Implementation Auditing

## Inspiratory Muscle Training in Pulmonary Arterial Hypertension

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### **Abstract:**

Pulmonary arterial hypertension (PAH) is a serious pathology that affects survival. Early diagnosis and treatment are important in patients with PAH. Patients with PAH complain of poor quality of life in the later stages of the disease. Pulmonary Rehabilitation (PR) is one of the treatment components. There are a limited number of studies on the content and effects of PR in patients with PAH. PR is a multidisciplinary approach. In PR content, Inspiratory muscle training (IMT) has an important place. The aim of this study is to examine the effects of IMT in PAH patients. Before January 2022, three main databases were searched: PubMed, Web of Science and Cochrane Library. The search was limited to randomized controlled prospective studies published in the last 5 years. Studies involving IMT in patients with PAH were included. In total, 44 articles were found. 40 articles were scanned after the studies that were the same were excluded. After reading the full texts, two studies were found that fulfil the inclusion criteria. In the first study, it was found that exercise capacity and P<sub>Imax</sub> increased after a 40-session IMT program. In the second study, after a 40-session IMT program, changes in inspiratory muscle strength were higher in the intervention group than in the placebo group. Knowing the effectiveness of IMT applied as part of PR is especially important for patients with PAH who cannot or do not want to participate in exercise training. IMT increases functional exercise capacity and inspiratory muscle strength in patients with PAH. However, its effectiveness in improving quality of life was unclear. It should not be forgotten that the number of studies is small and insufficient. More studies are needed on this subject.

**Keywords:** pulmonary arterial hypertension; inspiratory muscle training; functional exercise capacity; life of quality

## Effects of Testicular Torsion on Seminiferous Tubule Diameter and Testicular Biopsy Score

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### Abstract:

Testicular torsion is caused by the rotation of the spermatic cord around its axis, and the blood flow to the testis and its appendages is blocked. Since the testicles are the place where spermatogenesis takes place in male reproduction, any problems in this part cause serious problems in reproduction. In the literature review, some information has been obtained, such as that there are problems in sperm quality parameters, seminiferous tubule diameters and Johnson score decrease in parallel with the time passed after torsion of the testicles. In addition, there is information that increases in the levels of reactive oxygen radicals and proinflammatory mediators, decreases in antioxidant enzymes and testosterone hormone levels. Testosterone is very important for both spermatogenesis and normal morphology of seminiferous tubules. Early diagnosis and timely appropriate treatment are of great importance for resolution of ischemia and preservation of the damaged testis. The decision to preserve or remove the torsioned testis should be made according to the duration of ischemia and the viability of the testicular tissue in the surgical examination. The main treatment is surgical detorsion. Thus, reperfusion is achieved. However, in addition to surgical detorsion, some chemicals with antioxidant and anti-inflammatory properties are also used. Detorsion should be done as soon as possible. According to published reports, this period should not exceed 4-6 hours. However, despite a very successful surgical intervention, testicular atrophy and infertility may develop in the following years. For this reason, it would be the most logical approach to prevent the formation of factors that predispose to torsion as much as we can (except in cases where it is not possible to intervene).

**Keywords:** rat, seminiferous tubule diameter, testicular biopsy score, testicular torsion.

## Desensitization Training in Hippotherapy Horses<sup>#</sup>

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### Abstract:

With this study, in order to perform hippotherapy applications in a safe and healthy way it is aimed that the horses to be used in hippotherapy applications are unresponsive to sudden sounds and contact. For this purpose, desensitization training was given to total eight horses that two gelding and six mare horses in the horse breeding and coaching program using different materials and under the supervision of the veterinarian in a closed manege environment by trainers. All the materials used in the training were applied to the horses in the form of showing, smelling and touching, respectively, on both sides of the horse, in the form of thirty minute trainings, four times a day with an interval of one hour for a total of fourteen days. The study was carried out by setting different goals each week, and in the first week the horses were asked to be calm and cooperate and in the second week the horses were asked to get used to the materials and remain unresponsive. As a result, it was observed that all horses reached the desired targets on a weekly basis and successfully completed the desensitization training. Having completed the desensitization training of the hippotherapy horse is an important factor for the success of hippotherapy practices. By giving these trainings to the horse by an experienced hippotherapy horse trainer, it is possible for the client (individuals in need and disabled individuals) and the expert healthcare team to perform the practices safely.

**Keywords:** disabled individual, hippotherapy, horse, horse trainer, horse training

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## The Effect Of Vitamin B12 On Alzheimer's Disease

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### Abstract:

Alzheimer's disease is widely seen all over the world and in our country and it is a type of dementia that threatens human health and life. Alzheimer's disease, which constitutes the majority of all dementia cases in the world, has a poor prognosis and generally occurs in the later stages of life, but there are cases that are mentioned at early ages. Today, although the exact cause of the disease is not known, factors such as age, gender, family history and vitamin B12 deficiencies can be mentioned. In this disease, which has no definitive cure, it is aimed to minimize the symptoms seen in the stages of the disease and to facilitate the lives of the patients by applying symptomatic treatment. In addition, studies continue to delay and prevent the occurrence of the disease. As a result of vitamin B12 deficiency, neurological disorders and dementia can occur. Various studies have shown that there may be a relationship between vitamin B12 deficiencies, which is an important health problem in the world and in our country, and Alzheimer's disease, which is known as the most common type of dementia. Taking enough amounts of vitamin B12 will have a protective effect against Alzheimer's disease and reduce the risk of Alzheimer's disease. Vitamin B12 levels decrease with aging and the risk of Alzheimer's disease increases in individuals. It is thought that the increase in folate deficiency with aging in addition to vitamin B12 affects the creation of Alzheimer's disease. There are important metabolic events in which vitamin B12 takes part. It is thought that some disorders that occur when vitamin B12 cannot fulfill its task, which acts as a coenzyme in these metabolic events, are a risk factor for the formation of Alzheimer's disease. Various studies have also found vitamin B12 deficiencies in Alzheimer's patients. It is important in terms of Alzheimer's disease that individuals who experience memory loss and amnesia regularly measure their vitamin B12 levels and eliminate their deficiency.

**Keywords:** Alzheimer's disease, vitamin B12, homocysteine

## Effect of High Fructose Corn Syrup on Human Health

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### **Abstract:**

Carbohydrates have an important part of our daily diet. Starch and sucrose constitute a large part of the carbohydrates we consume in our diet. Sucrose, which has been used for centuries after honey, which is called the first known sweetener, and is considered one of the most important nutrients, is obtained from sugar cane; Later, it started to be produced from sugar beet. According to the World Health Organization, in addition to the sugars naturally found in honey, syrup and fruit juices, monosaccharides and disaccharides added to foods during processing or preparation are described as free sugars. The monosaccharide fructose, which forms the basic structure of plant-based carbohydrates, is obtained from foods such as fruit and honey, which were mostly natural in ancient times; Recently, the consumption of added sugars has increased considerably due to the increase in added sugars. The most common forms of added sugar in our diet are sucrose and high fructose corn syrup. High fructose corn syrup (HFCS) is a liquid sweetener produced as an alternative to sucrose, which is formed by hydrolyzing corn starch into corn syrup with the chemicals and enzymes used. The fact that HFCS is an important risk factor in the formation and development of obesity, diabetes, liver, kidney diseases and many other diseases that occur with its frequent use in today's diet has increased the research on this subject and its negative effects have been revealed. The main goal of this review study is to demonstrate that diseases that may occur with a decrease in the use of high-fructose corn syrup, the consumption of which is ignored in the near and dec process, can be prevented.

**Keywords:** sucrose, fructose, high fructose corn syrup, sweetener

## Useful and harmful entomofauna of the bean *Vicia faba* L. in the northern region of Algeria

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### Abstract:

Legumes are one of the largest botanical groups with over 730 genera and 19,400 species. They are considered a home and food source for insects. The aim of this work is the study of the biodiversity and the distribution of the entomofauna associated with the broad bean in the region of Boumerdes, in the North of Algeria. Several sampling methods are used, including colored cups and entomological nets during all seasons. According to the results, a considerable richness in number of individuals and species is noticed. The majority of insects captured belong to the orders Coleoptera (45%) and Hymenoptera (40%), followed by Diptera (6%), Hemiptera, Orthoptera and then Lepidoptera. A large number of families are highlighted, including that of the Apidae, represented by a rate of 77%, the Coleoptera with 74%, followed by the family of the Coccinellidae (17%). In terms of specific richness, the honeybee *Apis mellifera* is the most abundant (89%), followed by *Tropinota squalida* and *Coccinella septempunctata* 14% and 10% respectively.

**Keywords:** entomofauna, legume, abundance, diversity, Algeria.

## Leaky Bowel Syndrome and Their Health Effects

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### **Abstract:**

The intestine is the part of the digestive system located between the stomach and the anus. It consists of two main parts, the small and large intestines. The health of the intestines, which is the center of the digestive system and recently defined as the second brain, is very important for the overall health of the body. The digestive system starts from the mouth and continues to the esophagus, stomach, small intestine, large intestine and anus. Auxiliary organs of the digestive system are the liver, pancreas and gall bladder. Leaky gut syndrome is a condition of increased permeability between cells in the epithelial layer of the intestinal wall. Due to these spaces, which are more than normal, they cause toxic substances for the body as well as undigested substances to enter the bloodstream. With the entry of these molecules into the body, the immune system begins to form antibodies against its own tissues to protect the body. Overstrain of the immune system can lead to chronic inflammation. Those on antibiotic therapy, those with insulin resistance, exposure to heavy metals and toxicity common today, as well as large consumption of alcohol and simple sugars, exposure to stress, food allergies, and exposure to food before four months of age in infancy increase intestinal permeability. why could it be. Excess of a diet rich in fat and refined carbohydrates causes gastrointestinal system disorders and also affects the increase in intestinal hyperpermeability. For this reason, Leaky Gut Syndrome has been localized especially in Western countries. In Leaky Gut Syndrome, consumption of complex carbohydrates or dietary fiber should be greater than consumption of simple carbohydrates. Long-chain fatty acids can induce biological responses in the gut and regulate intestinal permeability. Most natural prebiotics are dietary fiber found in plants. Dietary fiber cannot be digested by the intestines due to indigestible cellulose, but the gut microbiota can convert it to SCFAs to maintain gut barrier functions. Of the SCFAs, especially butyrate, is an important short-chain fatty acid in the case of leaky gut, its task being the main factor protecting the gut from leakage.

**Keywords:** leaky gut syndrome, leaky gut, autoimmune diseases, complex carbohydrates, dietary fiber

## Investigation of the antidiabetic effect of curcumin administration on streptozotocin induced diabetic rats\*

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### Abstract:

In this study, it was aimed to investigate the antidiabetic effect of curcumin administration to streptozotocin induced diabetic rats. The study material consisted of 32 Sprague-Dawley male rats. Feed and water were given ad libitum throughout the study. Group 1-4 (n=8) were designated as control, diabetic, curcumin, and diabetes+curcumin, respectively. To induce diabetes, a single dose of 45 mg/kg Streptozotocin was administered to group 2 and 4 on the 1<sup>st</sup> day of the experiment. Curcumin was given to the groups 3, and 4 at a dose of 100 mg/kg/day by oral gavage for 35 days. Those with fasting blood glucose levels above 250 mg/dl at the end of 72 hours were considered diabetic. At the end of the study, 10% ketasol (0.8-1.3 ml/kg) and 2% basilazine (2-5 mg/kg) were administered to the rats of each group, and blood was taken from the heart. Glucose, total protein, albumin, uric acid, total cholesterol, AST, and ALT levels in serum were measured by spectrophotometric method in an autoanalyzer device. At the end of the study, it was determined that blood glucose levels were close to each other in Groups 1 and 3. It was significantly higher in the groups 2 and 4 ( $P<0.05$ ). ALT and AST enzyme activities were similar in the control and curcumin group, and significantly higher in the diabetes group and the group treated with curcumin after diabetes ( $P<0.05$ ). TP and albumin levels decreased in the diabetic group compared to the control group ( $P<0.05$ ), but slightly increased in the curcumin-treated group, but this was not significant ( $P>0.05$ ). The uric acid levels were found to be increased in the diabetes group compared to the control group ( $P<0.05$ ), and slightly decreased in the curcumin-treated group ( $P>0.05$ ). Total cholesterol levels increased in groups 2 and 4 compared to groups 1 and 3. In conclusion, the administration of curcumin to rats with diabetes mellitus for treatment purposes slightly decreased blood glucose levels and could be recommended as an alternative treatment for diabetic patients.

**Keywords:** antidiabetic, curcumin, diabetes mellitus

\*This research was supported by the Scientific Research Projects Commission of Ondokuz Mayıs University (Contract Grand Number: PYO.VET.1904.21.008).

## The effects of curcumin administration on total oxidant-antioxidant status in rats with experimental diabetes mellitus\*

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### Abstract:

In this study, it was aimed to investigate the effects of curcumin administration on oxidant and antioxidant systems in serum and brain tissue of rats with streptozotocin induced diabetes mellitus. The study material consisted of 40 healthy-male rats. Feed and water were given ad libitum throughout the study. Group 1-5 (n=8) were designated as control, diabetic, curcumin, diabetes+curcumin, and curcumin+diabetes, respectively. To induce diabetes, a single dose of 45 mg/kg Streptozotocin was administered to group 2 and 4 on the 1<sup>st</sup> day and to group 5 on the 28<sup>th</sup> day of the experiment. Curcumin was given to the groups 3, 4 and 5 at a dose of 100 mg/kg/day by oral gavage for 35 days. At the end of 72 h, those with a fasting blood glucose level of 250 mg/dl and above, were considered diabetic. At the end of the study, the bloods were taken from hearts, and the brain tissue was removed by necropsy. Glucose levels in serum were measured by spectrophotometric method using an autoanalyzer device. Total antioxidant (TAS) and total oxidant (TOS) levels in serum and brain tissue were determined with Rel Assay Diagnostics' kits. It was determined that blood glucose levels were close to each other in Groups 1 and 3 ( $P>0.05$ ), and it was significantly higher in groups with diabetes ( $P<0.05$ ). Also, the TAS level in the serum was the lowest in group 2, and increased in group 4 ( $P>0.05$ ) and group 5 ( $P<0.05$ ). In the brain tissue, TAS levels were highest in group 3, and decreased in the diabetes-treated groups ( $P>0.05$ ). TOS levels in serum and brain tissue were lowest in group 3, and highest in the diabetes group, and decreased with the curcumin administration ( $P>0.05$ ). In conclusion, the formation of diabetes was affected by oxidant and antioxidant parameters, and the curcumin application was effective in increasing antioxidant capacity and decreasing oxidant capacity. Curcumin could be recommended as an alternative treatment in addition to diabetes treatment.

**Keywords:** Antidiabetic, Curcumin, Diabetes mellitus

\*This research was supported by the Scientific Research Projects Commission of Ondokuz Mayıs University (Contract Grand Number: PYO.VET.1904.21.008).

## Cadmium toxicity: activation of reactive oxygen species in different organs of soil invertebrates

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### Abstract:

Dihydroethidium (Hydroethidine, 5-ethyl-5,6-dihydro-6-phenyl-3,8-diaminophenanthridine) is one of the commonly dye used for analyzing superoxide levels (differentiation ROS+ and ROS- cells). After reaction of DHE with superoxides, the ethidium/2-hydroxyethidium is formed. Reactive oxygen species (ROS) play an important role in cell signaling and homeostasis maintenance. The project's main purpose was to investigate the activation of ROS in cells of different organs (midgut, salivary glands, gonads: ovaries and testes) in soil invertebrate *Lithobius forficatus* (Myriapoda, Chilopoda) caused by cadmium in the environment and in food. The animals were divided into experimental groups: **C** – the control group, the animals cultured in laboratory conditions in a horticultural soil and fed with *Chironomus* larvae; **Cd12** – animals cultured in a soil and fed with *Chironomus* larvae maintained in water containing 80 mg/liter CdCl<sub>2</sub>, 12 days (short-term exposure), **Cd45** - animals cultured in a soil and fed with *Chironomus* larvae maintained in water containing 80 mg/liter CdCl<sub>2</sub>, 45 days (long-term exposure), **Cd12a** – animals bred in a soil containing 80 mg Cd per kg for 12 days (short-term exposure), **Cd45a** – animals bred in a soil containing 80 mg Cd per kg for 45 days (long-term exposure). The studies were conducted using confocal microscopy and flow cytometry. Studies have shown that different organs in the body react differently to the presence of heavy metal in the soil and in the food the animal feed.

**Keywords:** cadmium, digestive system, gonads, reactive oxygen species.

The study has been financed by the National Science Centre, Poland, grant no 2017/25/B/NZ4/00420.

## Identification, Diversity and Prevalence of Protozoan Parasites of Commercially Important Fresh Water Fish Species from Different Landing Sites of River Ravi Pakistan

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### Abstract:

Parasites are significant component of biodiversity. They negatively affect fish appearance, growth and reproduction. In this study, prevalence, diversity and intensity of protozoan parasite were examined in freshwater fishes. Total 405 fish samples were taken from three harvesting sites of River Ravi named as Head Balloki, Lower Bari Doab Canal and Okara. Fish samples were taken into laboratory. Ecto-parasites were examined on skin, gills and fins with hand lens. Wetmount were prepared by taking mucosal scrapings from external organs, gills, fins, and skin. Endo-parasites were examined through wetmount preparation from all internal organs. The identified protozoan parasites were *Amoeba*, *Chilodonella*, *Coccidia*, *Costia*, *Cryptobia*, *Ichthyophthirus-multifilis*, *Microsporidia*, *Piscinoodinium*, and *Thrombocryptopenia*. Prevalence of protozoan parasite was maximum at Okara site. Diversity of parasite was observed in intestine of *Labeo rohita* (rohu) and density of parasites was in gills. The study also concluded that prevalence of protozoan parasites had observed increased with increasing length, size and age of fish.

**Keywords:** freshwater fish, protozoan parasites, wetmount, prevalence, density and diversity.

## The Use of Shear Wave Elastography in the Diagnosis of Pancreatic Fibrosis in Patients With Severe Chronic Pancreatitis

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### Abstract:

Recently, among the methods of non-histological diagnosis of pancreatic fibrosis (PF), transcutaneous Shear Wave Elastography (SWE) is considered a promising tool for determining the severity of the disease. Development of additional non-invasive diagnosis of the state of the pancreatic parenchyma using shear-wave sonoelastography in patients with chronic pancreatitis. We examined 58 patients with severe chronic pancreatitis (CP). The age of patients was  $(47.1 \pm 3.2)$  years. The anamnesis of the disease ranged from 3 to 15 years. Ultrasonic elastometry and elastography were performed by transcutaneous access by SWE mode. The consistency of the software was evaluated by the nature of color mapping and its distribution on the color scale "blue-green-yellow-redcolor". Evaluation of changes in the rigidity of the parenchyma of the software during the deepening of fibrosis processes was studied by comparing the data of sonoelastometry with the results of histological examination of software biopsies obtained during surgery. Morphometry of the structural components of the software showed that with the development of complicated CP there is an increase in the area of fibrous tissue and a decrease in the area of acinar components, characterized by a strong inverse relationship between the degree of fibrosis and the volume fraction of acinar tissue ( $r = -0,83$ ;  $p < 0,05$ ), as well as a direct relationship between the degree of fibrosis and the volume fraction of connective tissue ( $r = 0,61$ ;  $p < 0,05$ ). If at a fibrosis of the III degree acinar tissue occupied  $(25,39 \pm 2,01)$  %, conjunctive tissue -  $(64,33 \pm 3,85)$  %, fatty -  $(6,42 \pm 4,48)$  %, at a fibrosis of the IV degree acinar tissue was  $(2,86 \pm 0,76)$  %, conjunctive -  $(74,11 \pm 4,17)$  %, and adipose tissue was  $(20,14 \pm 4,29)$  %. Such manifestations indicated severe irreversible changes in the secretory function of the pancreas. When comparing the indicators of sonoelastometry of normal pancreas and pancreas in CP, a significant increase in tissue stiffness was observed between all anatomical parts of the body. Thus, in stage IV fibrosis of the pancreas there was an increase in sonoelastometric stiffness in the head of the pancreas 2.4 times ( $p < 0,05$ ), in the body of the pancreas – 2,1 times ( $p < 0,05$ ) and in the tail 2,2 times equal to  $(9,81 \pm 1,55)$   $(8,12 \pm 0,62)$   $(8,17 \pm 1,80)$  kPa compared to the norm  $(4,05 \pm 0,33)$   $(3,86 \pm 0,46)$   $(3,73 \pm 0,53)$  kPa, respectively. It was found that the degree of fibrosis morphologically assessed correlated with the degree of fibrosis according to transcutaneous shear wave elastography,  $r = 0,71$ ;  $p < 0,05$ .

**Key words:** pancreas, fibrosis, chronic pancreatitis, sonoelastometry.

## A Postbiotic Group: Cell Wall Components

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### **Abstract:**

The presence of techno-functional limitations of probiotics, such as viability controls, draws attention to postbiotics. Postbiotics (metabiotics) are a wide range of bioactive components such as bacterial enzymes, organic acids, bacteriocins, cell wall components, surface layer proteins and cell-free supernatants released into the environment after the disintegration of microorganism cells or secreted by living microorganisms. An important group of postbiotics is "Cell Wall Components (CWC)". There are studies showing that some components in the cell walls of probiotic bacteria have beneficial effects on health and can be used for therapeutic purposes. In these studies, it was stated that cell wall components such as peptidoglycan, teiconic acid and lipoteiconic acid exert immunomodulatory effects and protect against colitis. Also, there are studies exploring the antibiofilm, antiproliferative, anticancer, or anti-tumor effects of these ingredients. But, there is a high need for new research on these bioactive molecules.

**Keywords:** Postbiotic, Metabiotics, Cell wall components, Probiotic

## Evidence Based Practices in Infertility that are Biologically Based Traditional and Complementary Medicine Practices

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### Abstract:

Infertility is a biopsychosocial phenomenon that results in couples in reproductive age unable to have children despite having regular unprotected sexual intercourse for one year. In this process, couples experience many problems such as decreased self-esteem, sexual dysfunctions, ineffectiveness in role performance, loss of control, anxiety, depression, social isolation, guilt, social pressure and stigma. Therefore, in coping with this period, which they perceive as a crisis that negatively affects their quality of life, they can apply to biologically-based traditional and complementary medicine (T&CM) practices, which they think are effective, safe and more economical, aiming to increase the chance of conception as well as medical treatment. In this review article, the evidence level of studies on biologically-based T&CM practices such as lifestyle changes, vitamin and mineral supplements, herbal product consumption, which infertile couples frequently apply, has been examined. It has been determined with high evidence that healthy lifestyle behaviors such as being at a normal weight for both men and women, eating healthy, limiting alcohol consumption and not smoking can be effective in preventing infertility. It has been reported that phytoestrogens preferred by women, herbal products such as tribulus terrestris, black cohosh and vitex agnus-castus mostly affect hormone levels (FSH, LH, prolactin, estrogen, etc.) positively, but do not change pregnancy rates. In the prevention of male infertility, the use of supplementary products such as selenium, carnitine, coenzyme Q10 and folate positively affects sperm parameters, but more randomized controlled studies with a high level of evidence on vitamin and mineral support for both men and women are needed. With the information presented, it is aimed that infertile couples prefer reliable and effective T&CM practices and that all relevant health professionals, especially nurses working in this field, can provide training/consulting services for the benefit of the patient with awareness. Thus, it is thought that by increasing the rate of infertile couples preferring T&CM practices with a high level of evidence, a social contribution can be provided to the preservation and improvement of fertility.

**Keywords:** infertility, traditional and complementary medicine, biologically based practices, evidence based practices.

## The Effects Of Rosuvastatin And Pravastatin On Bone

### Metabolism In Diabetic Rats

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#### **Abstract:**

In this study, the effects of rosuvastatin and pravastatin on bone metabolism were evaluated. Comparison of the positive or negative effects of two different statins on biochemical parameters related to bone metabolism in 20 mg / kg / day diabetic rats will be contribute to the enrichment of the literature on this subject. In addition, information will be obtained about whether the use of statins will be beneficial in bone metabolism disorders that may occur due to aging or diabetes in DM patients. In a diabetic rat model induced by Streptozotocin (STZ), the possible effects of Rosuvastatin and Pravastatin, both of which are hydrophilic, on biochemical parameters and histological examination related to bone metabolism (20 mg / kg) were examined in comparison with the control groups. In the intergroup comparisons, Phosphate (P) level was lower in the Pravastatin group than the controls ( $P = 0.017$ ). However, there was no difference in the P level in the Rosuvastatin group compared to the control group and the diabetes group. The calcium (Ca) level was increased in the Rosuvastatin group then the the controls ( $P = 0.002$ ). However, there was no significant change in Ca level in the Pravastatin group. The vitamin D2 level of rats was similar in all groups and was not statistically significant. There was no significant difference between the groups in terms of both osteoblastic activity and bone marrow cellularity. In conclusion, although more extensive studies are needed, our study revealed that the serum Ca level was high in rats given rosuvastatin, and P levels were low in rats given pravastatin. But cytologically, there was no change in bone structure. Our study revealed that we should be a little more cautious about the information that statins have a positive effect on bone tissue.

**Keywords:** Bone Metabolism, Diabetic Rats, Pravastatin, Rosuvastatin

## A New Approach to Osteoporosis: Gut Microbiota

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### Abstract:

It is estimated that more than 200 million individuals have osteoporosis worldwide. Moreover, the incidence of osteoporosis increases with age. While dysbiosis is considered a risk factor for many diseases, especially diabetes, cancer, cardiovascular diseases, and obesity, its effect on bone-related diseases such as osteoporosis has recently come to the fore. It has also been shown recently that the diversity of gut microbiota is reduced in osteoporotic patients, leading to a state of dysbiosis. This study aims to reveal the relationship between osteoporosis and microbiota. As a research method, articles containing the words microbiota and osteoporosis in the last 5 years were reviewed on the PUBMED database. As a result of the research; it has been observed that the gut microbiota can affect bone turnover through metabolites such as lipopolysaccharides, bile acids, and short-chain fatty acids. It is known that the intestinal microbiota is closely related to the secretion of many hormones, such as sex hormones, serotonin and leptin, which have an important role in bone turnover. Finally, the T cell-mediated immune system is closely related to microbiota and bone health. In conclusion, gut microbiota and gut microbiota components provide new ideas and targets for the clinical treatment of osteoporosis by different mechanisms. At this point, the microbiota can regulate bone metabolism by influencing host metabolism, immunity, and endocrine environment. However, more human studies are needed to fully elucidate the relevant mechanisms.

**Keywords:** osteoporosis, microbiota, short chain fatty acids, immune system

## Knowledge of Clients of Beauty Salons about Hyaluronic Acid and Its Impact on Skin Revitalization

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### Abstract:

Skin aging is a physiological, natural, and irreversible process. Nowadays, many women tend to keep their youthful appearance as long as possible. The knowledge of women about the factors accelerating and slowing down the aging process of the skin is increasing. Hyaluronic acid (HA) is a substance widely used in modern cosmetology and is one of the most valued on the aesthetic market as it is highly biocompatible and low-toxic. It maintains proper hydration and a healthy and youthful appearance of the skin because it occurs naturally in the human body. HA is an essential element of both cosmetic and aesthetic medicine treatments. In beauty salons, women perform cosmetic procedures, such as oxygen infusion, sonophoresis, iontophoresis, mesotherapy - needle-free, microneedle or needle mesotherapy, and aesthetic medicine, i.e., fillers. HA is a component of cosmetics used externally, preparations intended for home care. HA therapies support the fight against skin defects such as wrinkles, dry skin, loss of skin elasticity and firmness, scars, stretch marks, cellulite, burns, wounds, and ulcers. This study aimed to test the knowledge of clients of beauty salons about treatments with the use of hyaluronic acid and their impact on skin revitalization. The aim of the study was achieved by conducting an original survey consisting of 30 questions among 100 women. The questionnaire was divided into parts A and B. Part A checked the respondents' knowledge about hyaluronic acid and its use in anti-aging therapy. In contrast, part B reviewed the ability of women the use treatments and preparations containing hyaluronic acid. By analyzing the obtained results, it can be concluded that women have a basic knowledge of hyaluronic acid. They use cosmetics with its content in-home care and use cosmetic treatments and aesthetic medicine.

**Keywords:** skin aging, hyaluronic acid (HA), aesthetic medicine treatments, cosmetic treatments, revitalization

## Phytochemical Analysis of Hydro-Ethanollic Seed Extract of *Amaranthus Hypochondriacus* and Its Antioxidant Activity

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### Abstract

*Amaranth* (*Amaranthus Hypochondriacus*) plant commonly refers to the sustainable food source for the 21st century. The crop has witnessed significant attention in recent years due to its high nutritional value and medicinal advantages. It possesses numerous therapeutic actions which include hepatoprotective, nephroprotective anti-inflammatory, gastro protective anti-cancerous and cardio-protective etc. The present study explores the antioxidant potential of the hydroethnolic seed extract of *Amaranthus Hypochondriacus* (HSAH) and analysis of its phytochemicals. Antioxidant activity was assessed using NO radical scavenging, DPPH radical scavenging, reducing power activity, and metal chelating of Fe<sup>+2</sup> which revealed that the Seed extract possesses excellent antioxidant potential with respective IC<sub>50</sub> values 69.76±2.80, 35.75±1.2, 10.09±1.15, 221.96±8.31 µg/ml. Quantitative phytochemical analysis showed total phenolic content and total flavonoids content 1.61±0.22 mg/gm and 0.41±0.11mg/gm respectively. The phytochemical screening of the crude extract revealed the presence of alkaloid, flavonoids, carbohydrates, proteins, glycosides, oils, phenolic compounds, terpenoids, saponins and tannins whereas the coumarins, resins and steroid was absent in the extracts. The seed of *Amaranthus* showed the highest total phenolic content and total flavonoid content. There was a strong correlation between total phenolic content and total flavonoid content and the antioxidant activity. The result suggests that the HSAH can be a good source of antioxidants.

**Keywords:** Amaranth, phytochemical, antioxidant activity

## Phytochemical Characterization, Antioxidant and Anti-Inflammatory Potential of *Calligonum comosum* Anti-Leishmania

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### Abstract:

*Calligonum* is a plant genus in the Polygonaceae family with around 80 species found in the Mediterranean, Asia, North America, and North Africa. This study aims to perform phytochemical screening of the aerial part of *Calligonum comosum* (Cc) to determine the alkaloids, flavonoids, tannins, and carbohydrates compound evaluate their antioxidant activity using the DPPH and the RP tests, as well as the assessment of *in vitro* growth inhibition of promastigotes as a measure of anti-leishmanial activity against *L. major* and *L. tropica* and test their anti-inflammatory effect *in vivo* using the contact hypersensitivity (CHS) model in *Balb/c* mice. Phytochemical screening revealed the presence of important secondary metabolites in the young branch and leaves. Although, the extract plant showed good antioxidant activity. In fact, for the DPPH test, the IC<sub>50</sub> value is 13.98 ± 0.77 mg/mL compared with ascorbic acid. For the RP assay, the IC<sub>50</sub> values were 13.43 ± 0.19 mg/mL for extract and 12.04 ± 0.1 mg/mL for ascorbic acid. On the other side, the results showed that the extract obtained from *C. comosum* exhibited moderate anti-leishmanial activity against both *L. tropica* and *L. major* with IC<sub>50</sub> values were found 107 µg/mL and 133 µg/mL (using MTT test), 109 µg/mL and 126 µg/mL (using blue trypan), respectively. Our study allowed us to detect reduced edema in mice treated with Cc preparations relative to control. Cc effect was dose-dependent, statistically similar to that observed with indomethacin, independent of the plant genotype and the duration of the therapy. Altogether, our data indicate that Cc regulates inflammation induced *in vivo* in mice. We think that the antileishmanial activity shown by crude extracts from *C. comosum* justify the continuation of this study as a potential source of new drugs against Leishmania. The purification and identification of their active principles can be to performed and thus could be a source of anti-inflammatory molecules.

**Keywords:** *Calligonum comosum*. Phytochemical screening. Antioxidant, Anti-inflammatory *L. tropica*, *L. major*

## Study Of Transfer Of Persistent Organic Pollutants To The Food Of Animal Origin

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### Abstract:

Persistent organic pollutants (POPs) are highly toxic substances that have high stability in nature and bioaccumulation rate and are distributed in the environment and in food chains. The soil can act as a long-term reservoir for different pesticides, including organochlorine pesticides (OCPs). According to literature data, cow can consume 30% of the soil during the grazing, chickens eat 10-19 % of the soil with the feed. It was revealed that a large volume of the territories of Kazakhstan is contaminated with the most toxic and persistent OCP types such as DDTs and lindane (HCHs), the concentration of which is higher than the MRLs. The main aim of the research was to study the concentrations of OCP in soil samples in order to evaluate their transfer into food of free range animals. 5 villages (Kyzylkairat, Beskaynar, Belbulak, Amankeldy and Enbekshi) were studied, located from 25-50 km to the city of Almaty. The selected soils and milk samples were analyzed by the optimized method of sample preparation on GC-MS. The results showed that the soils from the villages of Kyzylkairat and Beskaynar have the highest concentrations of DDT, DDE and DDD with 8.5, 11.1, 1.2 mg/kg and 0.1, 1.1 and 0.2 mg/kg of dry matter, respectively. The soils of these sites are heavily polluted and, consequently, exceed the MRLs used in Kazakhstan more than 200 times. Consequently the milk samples were taken from Beskaynar and Kyzylkairat villages as more contaminated places. Milk sample preparation was carried out by the QuEChERS method (Quick, Easy, Cheap, Effective, Rugged and Safe) and analyzed by GC-MS. The results of the analysis showed that in the milk samples of Beskaynar, the metabolites of HCH and DDT are on average 0.05 mg/kg and 0.002 mg/kg, respectively; in samples taken from Kyzylkairat, the metabolites of HCH and DDT averaged 0.07 mg/kg and 0.001 mg/kg, respectively. The results of this study will be used for further research to estimate the transfer of POPs into food of animal origin.

**Keywords:** soil, contamination, organochlorine pesticides, HCH, DDT.

## Relationship between age and body size in the marsh frog, *Pelopylax ridibundus*

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### Abstract:

Individual animals, groups, and species can all be investigated for their life-history features, which are frequently linked to patterns of growth, development, reproductive investment, and survival. Accurate age determination of individuals is one of the most important issues in biological studies. Age and body size are two important demographic features incomprehension of the evolutionary life history and ecology of amphibians. In this study, we aimed to investigate the relationship between age and body size in a population of the marsh frog, *Pelopyhylax ridibundus* (Pallas, 1771). *P. ridibundus* is a widespread species in western, central, and eastern Europe and ranges as far eastwards as eastern Kazakhstan. Also, their legs are among the most preferred recipes of traditional cuisines, especially in European countries. For this purpose, we used 20 specimens from a frog farm in Adana, Turkey. We determined age using the skeletochronological process, which is considered to be one of the most reliable methods for determining the age of amphibians. Maximum age was determined as 13 years (mean: 7,10 years) in the studied population. Body size ranged from 88,21 mm to 103,72 mm (mean: 95 mm). According to statistical analysis, body size was not positively correlated with age (Pearson's correlation  $r = 0.285$ ,  $p > 0.05$ ). Such a result obtained from age- relationship in this population, is less common in amphibians.

**Keywords:** amphibians, life-history, skeletochronology, SVL

## Development of Functional Whey-Based Beverage Formulations with Lemon Concentrate, Mint Extract and Stevia

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### Abstract:

Globally, the functional product market increasingly develops new fortified products with improved nutritional and health benefits, including functional whey-based beverages. In the dairy industry, whey as a byproduct from production of various cheese types, due to its natural composition such as proteins, minerals and vitamins, has the potential to be processed into a beverage that is characterized by numerous health benefits, such as improve of immune activity, cardiovascular health and digestion, beneficial effect at diabetes, hepatoprotective effect, and reduction of blood fats, blood pressure, and body mass.

The aim of this study is to develop functional whey-based beverage formulations with the addition of lemon concentrate, mint extract and stevia as sweetener. In the research, two types of whey were used i.e. whey obtained from the production of Mozzarella cheese (I) and Ricotta cheese (II) in the dairy factory Caseificio Cesarina-Fejzi from Gostivar, Republic of North Macedonia. The whey heated at temperature of 65°C (5 min), cooled at 45°C was filtered through a sterile multi-layer muslin cloth. Then, in the whey, the stevia (1.25 %w/v), the lemon concentrate (0.25 %v/v, 0.75 % and 1.25 %v/v) and the mint extract (0.1 %w/v and 0.2 %w/v) were added by homogenization at 500 rpm (15 min) by using Ultra-Turrax homogenizer. The prepared beverage samples are filled into glass bottles and pasteurized at 72°C during 5 min. Samples were stored in a refrigerator (4°C) for further analysis. In a storage period of 56 days, the functional whey-based beverages were evaluated by the physicochemical characteristics (refractive index, colorimetric parameters, water activity, total acidity and pH), and sensory attributes.

The functional whey-based beverage formulations were stable to 32 days, with no significant changes, a slight drop in pH, excellent sensory properties, and overall acceptability. The development of a whey-based beverage with lemon concentrate, stevia and mint extract, in addition to waste valorisation, will also contribute to the preservation of the ecosystem, while creating opportunities for innovation in the dairy industry and /or beverage industry.

**Key words:** whey, functional beverage, shelf life, physicochemical and sensory properties.

## The relationship between the severity of covid-19 infection with the level of procalcitonin in children

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### **Abstract:**

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is the cause of the pandemic, emerged in Wuhan, China in December 2019 and was defined as Coronavirus 2019 (COVID-19). COVID-19 is now recognized as a multi-organ disease with a broad spectrum of manifestations. The aim of this study is to investigate the role of changes in PCT values to better predict the COVID-19 prognosis of pediatric patients and to draw attention to the importance of the subject by discussing the advantages and disadvantages of PCT. This study included 32 pediatric patients aged 0-18 years who were confirmed to have COVID-19 in the laboratory of the K. Farajova Scientific Research Pediatrics Institute between October 10, 2021 and January 28, 2022. Of the total individuals, 19 (59.4%) were male and 13 (40.6%) were female. Samples were analyzed with the ICHROME PCT Rapid Test. The result displayed by the ICHROME PCT was measured in ng/mL. Of the COVID-19 patients, 25 were moderate, 5 were severe, and 2 were critical. In our study, 17 patients had a normal PCT level (<0.5 ng/ml) and 15 patients had a high PCT level ( $\geq 0.5$  ng/ml) according to PCT results. High PCT level was found in proportion as 26.6% in women and 73.4% in men. Statistical analysis revealed that while there was a significant relationship between age and PCT value in COVID-19 patients, there was no relationship between PCT value and gender. It was reported that the ventilation requirement was greater in the high PCT group compared to the low PCT group, and more deaths occurred among the cases with high PCT levels. This study shows that PCT can be an indicator of disease severity and contribute to determining the severity of patients with COVID-19. Additional research is needed to further demonstrate the mechanisms by which increased PCT is synthesized and released in patients infected with SARS-CoV-2.

**Keywords:** Covid-19, procalcitonin, children

## Potential Promising Adjuvant Compounds for COVID-19: Postbiotics

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### Abstract:

Recently the world is battling a pandemic caused by a new coronavirus, called Severe Acute Respiratory Syndrome of Coronavirus-2 (Sars-CoV-2). Research in the literature describes the success of probiotics in treatment of viral infections from their byproducts, known as postbiotics, such as short chain fatty acids, functional enzymes, peptides, teichoic acids, peptidoglycan-derived peptides, polysaccharides, proteins, vitamins, plasmalogens and organic acids. Although the mechanisms of action of postbiotics on health cannot be fully and precisely explained, the data in the literature emphasize that postbiotics have antimicrobial, antioxidant and immunomodulatory effects. Regarding COVID-19, postbiotics and microbial metabolites are available, however the findings are interesting and demonstrate a potential of using them in this approach. Overall, microbial metabolites can be transported by the bloodstream to the lungs and act by inhibiting viral replication; in addition, they can improve the immune response against viruses. Some examples of soluble compounds (secondary bile acids, desaminotyrosine and short-chain fatty acids (butyrate) able to be transported via the circulation and reach the lungs. The exact mechanism of postbiotics is not fully understood, but they might promote a cross-talk between the intestinal microbiota and the host's immune system through interactions with cell-surface molecules, such as peptidoglycans and may play a beneficial role in minimizing COVID-19 infection. The metabolic product of *L. plantarum*, plantaricin BN, plantaricin D, plantaricin W, plantaricin JLA-9, presented antiviral activity by blocking the protein S, which is essential in the life cycle of SARS-CoV-2; in addition the lactococcine G from *L. plantarum* presented high affinity to bind to SARS-CoV-2 proteins S, and this bio-antimicrobial peptide presents minimal side effects. The modulation of the intestinal microbiota through the use of postbiotics represents a promising adjuvant approach for promising target of investigation in the fight against SARS-CoV-2 infection and improving the health of patients with COVID-19.

**Keywords:** covid-19, immunomodulation activity, gut microbiota, postbiotics, sars-cov-2

## Neuroradiological Findings in 3-Hydroxy-3-Methylglutaryl Coenzyme A Lyase Deficiency

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### Abstract:

Glutaric aciduria due to 3-hydroxy-3-methylglutaryl-CoA lyase deficiency (HMG-CoA lyase deficiency) is a leucine metabolism disorder that is autosomal recessive inherited and progresses with life-threatening episodes of severe hypoglycemia in the first year of life. The incidence of HMG-CoA lyase deficiency has been defined as 1 in 100,000 live births. The gene (3-HMG CoA lyase) is located in the short arm of the 1st chromosome and to date, 28 different mutations of this gene have been identified. This disorder is found to be more common in Portugal, Spain, and Saudi Arabia. Considering the rarity of the disease and limited treatment options, here, we aimed to report the neuroradiological findings in HMG-CoA lyase deficiency. A six-month-old boy was admitted to our hospital with complaints of vomiting and diarrhea. The diagnosis of 3-OH-3-methyl glutaric aciduria was made upon the laboratory tests of the increased excretion of 3-OH-3-methyl glutaric acid in the urine, hypoglycemia, hyperammonemia, and metabolic acidosis. There was no consanguinity between the parents. The patient's development was normal at follow-up. The patient was a 13-years-old when he was admitted again to our university hospital due to prolonged hypoglycemia and convulsions. Cranial magnetic resonance imaging (MRI) was performed. Cranial MRI showed diffuse and coalescent T2/FLAIR hyperintense lesions in the bilateral periventricular and subcortical cerebral white matter. Lesions showing diffusional restriction on DWI images were more prominent in the frontal and periaxial areas. A lactic acid peak was observed on MR-spectroscopy. The radiological, clinical, and laboratory findings supported the diagnosis of organic acidemia. Diffuse lesions in the periventricular white matter on neuroimaging accompanied by laboratory findings such as hyperammonemia, nonketotic acidosis, and hypoglycemia, suggested the diagnosis of organic acidemia.

**Keywords:** HMG-CoA lyase deficiency, metabolic acidosis, nonketotic hypoglycemia.

## Prevalence and Survival in patients with Bladder Cancer. A study in high

### Cancer Incidence zone

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#### Abstract:

Bladder cancer (BC) is the most common malignancy of the urinary tract caused by the uncontrollable division of cells lining the bladder. The clinicopathological characteristics of bladder cancer determine largely the prognosis and aid in the treatment and management of disease. The aim of the study was to analyze the incidence of bladder cancer in our region. The study prospectively screened all the patients who were diagnosed with bladder cancer between 2018 and 2020. Detailed history of 235 patients was taken and Kaplan-Meier (KM) survival analysis of 137 BC patients was also performed to evaluate any possible association between various clinico-pathological characteristics, with respect to overall survival (OS) and recurrence in terms of disease free survival (DFS). Various parameters like bladder cancer stage, grade, smoking status and gender showed a marked difference in both OS and DFS wherein smokers, females, low stage and grade of the disease accounted for significantly high OS and DFS in patients with the bladder cancer in Kashmiri population. Among BC cases, 78.72% (185) patients were males and 21.27% (50) were females with a male: female ratio of 3.7:1. The frequency of BC was observed to be 36.17% (85) in cases that belonged to the age group of <50 years whereas 63.82% (150) cases belonged to ≥50 years. Of all cases 67.65% (159) patients were active smokers. The pathological characteristics of bladder cancer cases included 59.14% (139) cases of low stage (pTa/pT1) versus 40.86% (96) of the high stage (pT2/higher). Moreover non-smokers, females and patients exhibiting low grade and stage had significant and better OS and DFS than the rest (Log rank  $p < 0.05$ ). Bladder cancer remains one of the leading cancers in our region despite absence of many occupational exposures except smoking.

**Keywords:** Bladder cancer, incidence, overall survival, disease free survival, stage

## Burns and the use of *Hypericum Perforatum L.* in the Treatment of Burns

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### **Abstract:**

The skin is one of the largest organs of our body and constitutes approximately 16% of body weight. In terms of surface area, the skin covers an area of approximately 1.5-2 square meters in an adult human. The most basic vital functions of the skin; thermal regulation, protection against fluid loss and barrier function against infectious agents. As a result of a burn injury, these three basic functions of the skin are impaired. A burn is a type of injury that occurs as a result of contact of the tissue with hot or cold temperatures, chemicals, electric currents or radioactive rays. A burn is a trauma that most of the society may encounter at least once in their lifetime. While large and complicated burns can become life-threatening as a result of shock, infection and related multi-organ failure, minor burns can affect quality of life by causing various degrees of functional loss. The required treatment varies according to the severity of the burn. Superficial burns can be treated with simple pain relievers, while larger burns may require longer treatment in specialized burn treatment centers. Running cold water on a burn can relieve pain and reduce scarring, but prolonged exposure to cold can also lead to low body temperature. 2nd degree burns may need to be cleaned with soap and water and then bandaged. It's not entirely clear what to do with the blisters, but it's probably best not to touch the bubbles. Full-thickness burns often require surgical treatments such as skin grafting. Although *Hypericum perforatum L.* is traditionally used for many different purposes among the public, the most common use is externally in wounds and burns, and internally in the treatment of depression. The flowering aerial parts of this plant are applied externally as tincture and oil on wounds and burns. *Hypericum perforatum L.*, by stimulating fibroblasts, increases the production of collagen in the tissue, and also shortens the wound healing process due to its antibacterial effect. In addition, the analgesic and antinociceptive effect of the plant contributes positively to this process.

**Keywords:** hypericum perforatum L., skin, burn

## Anti-Cancer Effect of Moroccan Cobra *Naja haje* Venom and Its Fractions Against Hepatocellular Carcinoma In 3D Cell Culture

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### Abstract:

Hepatocellular carcinoma (HCC) is the most common primary liver cancer in adults, the fifth most common malignancy worldwide and the third leading cause of cancer related death. An alternative to the surgical treatments and drugs, such as sorafenib, commonly used in medicine is necessary to overcome this public health problem. In this study, we determine the anticancer effect on HCC of Moroccan cobra *Naja haje* venom and its fraction obtained by gel filtration chromatography against Huh7.5 cancer cell line. Cells were grown together with WI38 human fibroblast cells, LX2 human hepatic stellate cell line, and human endothelial cells (HUVEC) in MCTS (multi-cellular tumor spheroids) models. The hepatotoxicity of venom and its fractions were also evaluated using the normal hepatocytes cell line (Fa2N-4 cells). Our results showed that an anti HCC activity of Moroccan cobra *Naja haje* venom and, more specifically, the F7 fraction of gel filtration chromatography exhibited the greatest anti-hepatocellular carcinoma effect by decreasing the size of MCTS. This effect is associated with a low toxicity against normal hepatocytes. These results strongly suggest that the F7 fraction of Moroccan cobra *Naja haje* venom obtained by gel filtration chromatography possesses the ability to inhibit cancer cells proliferation. More research is needed to identify the specific molecule(s) responsible for the anticancer effect and investigate their mechanism of action.

**Keywords:** anticancer molecules; Hepatocellular carcinoma; multicellular tumor spheroids; *Naja haje*; venom.

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## **Anaplasmosis in Goats: Reproductive Approach<sup>#</sup>**

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### **Abstract:**

Anaplasma species are intracellular rickettsial pathogens transmitted by ticks that have an impact on human and animal health. Anaplasma agents infect goats in many parts of the world and methods such as Giemsa staining, PCR and ELISA are used for diagnosis. Anemia, high fever, weight loss, abortion and jaundice can be seen in severe anaplasma infections in goats. It was aimed to investigate the relationship between kisspeptin levels and rare abortions, which is one of the anaplasma results. Kisspeptins are a neuropeptide produced by hypothalamic neurons that act as upstream stimulators of gonadotropin-releasing hormone (GnRH) neurons. The study material consisted of blood samples taken from 45 goats. Determination of control and patient groups was made with the help of clinical signs of the disease, giemsa stained blood smears and serological method (cELISA). The experimental group consisted of 35 goats with positive results, and 10 goats with negative results for the control group. Kisspeptin levels were determined in the sera obtained from the blood samples taken with the ELISA (goat Kisspeptin 1 ELISA Kit) kit. Kisspeptin level was higher in anaplasmosis goat group compared to healthy goat group. As a result, it was determined that the kisspeptin level was increased in the anaplasmosis group and presented to the literature.

**Keywords:** goat, anaplasmosis, abortion, kiss I

<sup>#</sup>If the study financially supported, the information should be given here.

## Brain MRI Findings as an Important Diagnostic Clue in Glutaric Aciduria Type 1

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### Abstract:

Glutaric aciduria type 1 (GA-1) is an autosomal recessive disorder caused by deficiency of glutaryl-coenzyme A dehydrogenase, with an accumulation of glutaric acid, 3-hydroxyglutaric acid, and glutaconic acid. Increased blood glutarylcarnitine levels are the basis for the identification of affected infants by newborn screening. Frequently, the only abnormality preceding the first episode is a progressive macrocephaly. Although neuroimaging findings are quite variable, the widening of the Sylvian fissures combined with abnormalities of the basal ganglia in a child with macrocephaly should raise the suspicion of this diagnosis. We describe a patient whose diagnosis was suggested by the brain MRI findings. An 8-years-old male child born of consanguineous marriage presented with gross developmental delay, mental retardation, and a history of recurrent episodes of seizures. Investigations including peripheral blood picture, serum electrolytes, blood glucose, serum ammonia, and liver function test were normal. Urine for tandem mass spectrometry (TMS) report was suggestive of glutaric aciduria. Cranial MRI showed abnormal low T1 and bright T2 signal intensities of the dentate nuclei, basal ganglia, and white matter. There was also mildly frontotemporal atrophy and widening of the Sylvian fissures and CSF spaces when compared to age-matched control. Diffusion-weighted images with an apparent diffusion coefficient map (ADC) revealed mildly diffusion restriction of the affected areas. There was no gadolinium enhancement in any of the lesions. The multivoxel MRS of the cerebral white matter lesions revealed increased lactate levels. GA-1 is an important neurometabolic disorder in children that is sometimes misdiagnosed, but it can be diagnosed easily based on typical neuroimaging and laboratory findings. Neuroimaging serves as a useful tool, many times providing the first clue to the diagnosis. Timely diagnosis and the start of treatment are likely to result in a better outcome.

**Keywords:** Glutaric aciduria type 1, brain magnetic resonance, pediatric neuroradiology

## Effects of Mediterranean Diet on Infertility

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### Abstract

Infertility is defined as the inability to achieve pregnancy clinically despite at least 12 months of regular unprotected sexual intercourse. In addition to traditional risk factors (genetics, endocrine, etc.), lifestyle factors such as diet also play an important role in infertility. Contrary to non-modifiable risk factors (parental age, low ovarian reserve, etc.) that can cause infertility, dietary intervention can have a positive effect on fertility. Mediterranean Diet high in vegetables, fruits, legumes, nuts, beans, cereals, grains, fish, and unsaturated fats such as olive oil while is lower intake of meat and dairy foods. There are studies showing an increase in sex hormone-binding globulin levels and fertility in women with high adherence to the Mediterranean diet, and an increase in semen parameters (sperm quality, sperm motility, sperm count) and testosterone levels in men. In addition, a study found that individuals with high adherence to the Mediterranean diet had a 44% lower risk of infertility than those with low adherence. But, in another study, it was determined that adherence to the Mediterranean diet increased the chance of success in treatment (the probability of embryo development) in infertile women receiving *in vitro fertilization* treatment. However, there are also studies that did not find a relationship between the Mediterranean diet and semen parameters and female fertility markers. These differences in the results of the study might be caused by the pesticides taken with fruit and vegetable consumption by individuals with moderate and high compliance with the Mediterranean Diet. In a study, it was determined that a two-week Mediterranean diet intervention after the traditional western diet increased pesticide residues (insecticide, organophosphate and pyrethroid) in the urine. Although the Mediterranean Diet is recommended as a healthy dietary pattern, pesticide exposure may affect fertility. Therefore, well-designed randomized controlled clinical trials are needed to clarify the effects of the Mediterranean Diet on fertility, taking into account pesticide exposure.

**Keywords:** infertility, mediterranean diet, pesticides

## An Overview of Individuals' Attitudes Towards the Vaccines Developed During the Covid-19 Pandemic Process

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### **Abstract:**

World Health Organization, vaccines; He defined it as “pharmaceutical products that enable our immune system to recognize and fight pathogens such as viruses and bacteria and protect our body against the diseases caused by them”. Serious measures were taken against the epidemic caused by the Covid-19 virus, which affected the whole world and caused an increasing number of deaths every day, and vaccine studies were started simultaneously in many different countries. While BioNTech, Sputnik V, Moderna, AstraZeneca and Sinovac vaccines are applied worldwide, only Sinovac and BioNTech are used in Turkey. BioNTech is a Germany-based vaccine developed by two Turkish scientists, and Sinovac is a China-based vaccine developed by Chinese scientists. In Turkey, successful results were obtained within the scope of the studies carried out by the Erciyes University Vaccine Research and Development Center against these vaccines, which are used as alternatives to each other, and the vaccine found was named Turkovac. With the completion of the studies and the vaccine becoming applicable, the discussions about the vaccines in question in traditional and digital media have increased. Since the number of studies related to the subject in Turkey is very few in the literature, it can be a general guide for health authorities and relevant institutions and organizations on vaccination studies. In addition, this study carried out while the pandemic continues has a current identity. It is recommended to make health education plans based on sociological foundations by establishing cooperation between institutions with a multidisciplinary approach in order to create community awareness. Individuals need to know that the vaccine will be offered to the public after the scientific process. The aim of this review is to evaluate the positive or negative aspects of people living in Turkey against the COVID-19 vaccine.

**Keywords:** Covid-19, Covid-19 Vaccines, Attitude, Overview of Vaccines.

## Use of Geometric Morphometry in the Field of Anatomy

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### Abstract:

Morphological examination of a tissue or organ is possible if it is objectively defined. Therefore, morphometric measurements have always been an indispensable part of anatomy. In this context, the first thing that comes to mind is traditional morphometry. Traditional morphometry is a form of morphometry that provides results with low statistical error margin, obtained by using tools and equipment that can give various statistical results. In the field of anatomy, the shape is taken as reference as morphometric measurements, and in this context, it is to examine the subjects such as length, width, comparison of one object or set of objects with another, and to reveal the statistical analysis of the variances of the results, if any. The field of geometric morphometry was first born by Francis Galton (1822-1911) with the methods and knowledge she worked on for many years. This method is primarily based on the quantification of face shapes. Later, D'Arcy Wentworth Thompson (1860-1948) introduced the first multivariate morphometry method, which included matrix manipulations, by taking shape measurements of biological structures. The geometric morphometry method has proven to be superior to the classical morphometry method in terms of minimizing the statistical error rate of the measurements in the tissues to be examined in anatomical studies. Geometric morphometry method consists of five main titles. These include the stages of 1. Design work 2.Data collection 3.Standardizing the data 4.Performing data analysis and 5.Interpreting the results. In terms of being an anatomical example, instead of taking many measurements from bones of the skeletal system such as the skull and hipbone it is possible to determine the species or sex with more accurate results by subjecting photographs of these bones taken from a fixed distance to the geometric morphometry method with computer aided programs.

**Keywords:** geometric, morphometry, anatomy

## Investigation of properties and possibilities to functionalize natural myeloid nanovesicles as potential carriers of therapeutic substances

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### Abstract:

Exosomes are one of the subpopulations of so-called extracellular vesicles (EVs) secreted by eukaryotic cells[1]. Exosomes belong to biological nanostructures with a size of 30-100 nm, their size may be different depending on the origin of the vesicles[2,3]. They can be used as a diagnostic tool, modifying or modulating the course and development of a disease or as specific, biocompatible carriers of a therapeutic substance [4-6]. The aim of the conducted experiments was to study the properties of exosomes isolated from the bone marrow of patients with blood cancers, in comparison with nanobubbles of healthy bone marrow donors, and the possibility of their use in specific targeted therapy, as carriers for imatinib mesylate. The research sample was bone marrow mixed with blood obtained from patients with haematological malignancies. As a control sample, blood-mixed marrow was used, collected from healthy individuals who had previously undergone stimulation of the myelopoietic pathways. The procedure developed used ultracentrifugation in combination with a precipitation technique, using ExoQuick. The size of isolated exosomes was examined by DLS method. Cytometric studies were performed using anti-CD63 and anti-CD81 antibodies for quantitative and qualitative assessment of the exosomes studied. The average size of exosomes isolated from healthy bone marrow donors (D1-D15) is 34.72nm, whereas for diseased individuals (C1-C15) it is 18.88nm. A spectrophotometric method was used to determine the amount of imatinib mesylate after attachment by passive incubation. The degree of attachment of imatinib mesylate for samples obtained from healthy donors averaged 13.7% and for sick patients 31.6%. The combination of two isolation methods (ultracentrifugation and precipitation) allows to obtain a homogeneous, purified isolate of exosomes from bone marrow. The use of the method of passive incubation of exosomes with imatinib mesylate makes it possible to obtain a form of the drug possible to use in targeted therapy of blood cancers.

**Keywords:** exosomes, bone marrow, imatinib mesylate, ultracentrifugation technique, precipitation technique

## Effects of Aging on Thiol/ Disulphide Homeostasis and Some Mineral Levels in Rats

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### **Abstract:**

In this study, it was aimed to investigate the effects of aging on serum mineral levels and thiol/disulphide homeostasis in rats of different age groups. The study material consisted of 24 healthy male Sprague-Dawley rats fed ad libitum. Group 1 consisted of 1.5 months-old, 2nd group 6 months-old, 3rd group 12 months old, 4th group 18 months old. Blood samples were collected from the heart by administering 10% ketasol and 2% basilazine to rats. Sodium (Na), potassium (K), chlorine (Cl), phosphorus (P), calcium (Ca), Iron (Fe) and magnesium (Mg) levels in serum were measured by spectrophotometric method in an autoanalyzer device. Serum Total Thiol (TTL) and Native Thiol (NTL) levels were determined with Rel Assay Diagnostics kit. The disulfide levels were calculated with the formula. It was determined that the changes in Na, Fe and Mg levels in rats of different age groups were not statistically significant ( $P < 0.05$ ). It was determined that the Ca level was significantly lower in group 2 and 3 compared to group 1. It started to increase again in group 4 ( $P < 0.05$ ). It was determined that the K level decreased in group 2 and 3 compared to group 1. It started to increase in group 4 ( $P > 0.05$ ). The Cl level started to increase with increasing age, and this increase was significant between group 1 and group 4 ( $P < 0.05$ ). It was determined that the difference between group 1, where TTL and NTL levels were highest in group 2, and started to decrease with aging, was not significant ( $P > 0.05$ ), while the difference between group 3 and 4 was significant ( $P < 0.05$ ). It was determined that the disulfide level started to increase with aging ( $P > 0.05$ ). In conclusion, it was determined that the mineral levels and Thiol/Disulphide Homeostasis changed with aging. It is thought that the supplementation of antioxidants and decreasing minerals may contribute to the passage of aging and to reduce the effects of diseases associated with aging.

**Keywords:** aged, mineral, thiol/disulphide homeostasis

## Milk-derived Bioactive Peptides in Health

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### Abstract

The aim of this study is to review of the milk-derived bioactive peptides in health. Bioactive peptides are sequences of peptides in a protein that exert a beneficial effect on body functions and positively affect human health, beyond its known nutritional value. These protein fragments, which are released together with gastric and pancreatic enzyme activity, are called biologically active peptides (bioactive peptides). It is activated by enzymatic activity and contains about 3-20 amino acids. Additionally, bioactive peptides can also be formed during food processing. These peptides can act as a hormone-like regulatory component in the body and regulate important body functions through their activities such as antihypertensive, antimicrobial, antithrombotic, immunomodulatory, opioid, antioxidant, and mineral binding functions, depending on amino acid size and content. The main sources of bioactive peptides found in milk are casein and whey proteins.  $\alpha$ -lactalbumin,  $\beta$ -lactoglobulin, lactoferrin, glycomacropeptide are the main bioactive peptides found in milk. Studies have shown that bioactive peptides obtained from milk have beneficial effects on the cardiovascular system with their antithrombotic effects, on the digestive system with their effects on appetite suppression, and on the immune system through their antimicrobial and immunomodulatory effects. As a result, due to the beneficial effects of milk-derived bioactive peptides in metabolism, their role in metabolic processes and their mechanism of action should be determined and accordingly they should be used in food enrichment and nutritional supplements.

**Keywords:** Milk, bioactive peptides, health

## Gestational Diabetes

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### Abstract:

Diabetes mellitus is a chronic endocrine and metabolic disease that requires continuous medical care and is characterized by carbohydrate, fat and protein metabolism disorders caused by insulin secretion, insulin action or both. Diabetes in pregnancy is a common medical complication and presents as pregestational diabetes or gestational diabetes. Pregestational diabetes is Type 1 or Type 2 diabetes diagnosed before pregnancy. Gestational diabetes mellitus is the impairment of glucose tolerance of any degree that occurs for the first time or is noticed during pregnancy. During the course of pregnancy, some changes occur in glucose metabolism in order to ensure the development of the fetus in the womb. The most important of these changes is the tendency of hyperglycemia to meet the increased energy need. This tendency can sometimes reach pathological dimensions and cause the development of DM in pregnant women. Although hyperglycemia can be seen in any period of pregnancy, it is most common from the 24th week of pregnancy. This is due to the fact that human placental lactogen (HPL), a placental-derived hormone that works against the blood glucose-lowering effect of insulin, reaches its maximum level from this period. GDM is a metabolic disorder that should be controlled starting from the 24th gestational week for maternal health and fetal life, since it may cause clinical manifestations such as respiratory distress syndrome (RDS) in the lungs, as well as fetal hyperinsulinemia and macrosomia with maternal and later fetal hyperglycemia. In relation to its prevalence in the community, although it varies according to different countries and ethnicities, 1-14% of pregnancies are complicated by gestational diabetes and 0.3-0.5% by pregestational diabetes. The frequency of pregnancies complicated by diabetes is increasing day by day. Due to the diabetogenic effect of normal metabolic changes that occur during pregnancy, diabetes during pregnancy should be handled more seriously. Since it is known that 135 thousand pregnancies in the world are complicated with gestational diabetes per year, it is very important to make early diagnosis with screening and diagnostic tests, to reduce maternal-fetal mortality and morbidity with appropriate treatment and careful pregnancy follow-up.

**Keywords:** Diabetes mellitus, Gestational diabetes, Pregnant.

## MIDWIFERYCARE? DOULA?

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### **Abstract:**

Since the beginning of life, women in all cultures have had the support of another woman during pregnancy and childbirth. Looking at the oldest paintings for ages, it is seen that there are at least two women beside the woman who gave birth. These women are midwives who are always with the woman at birth. Today, the midwifery profession has advanced in parallel with the developments in medicine and has become a professional discipline. Midwives have important responsibilities in reducing women's fears and anxiety related to birth, preparing them for labor and getting positive birth experience. Today, the midwifery profession has progressed in parallel with the developments in medicine and has become a Professional discipline. One of the most important factors that will make the birth experience positive for women is to provide supportive midwifery care to women. Birth coaching, which is considered to be some of the supportive initiatives in labor, can be given by people who have been trained on this subject for a short time. The fact that birth coaching does not have a standard education in our country, that the coaches who do not have the authority to give medical advice to women and that they manipulate the members of a Professional discipline by provoking women against midwives cause conflict between midwives and doulas.

**Keywords:** Midwife, midwifery, midwifery support, birth coach, doula

## Ginger as a Functional Food and Its Effects on Obesity

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### Abstract:

The aim of this study is to examine the effects of ginger on obesity in the light of literature information. Published reviews and randomized controlled studies containing the words "ginger" and "obesity" between 2015-2021 were reviewed in PUBMED. Ginger (*Zingiber officinale Roscoe*) is considered a functional with important bioactive components. Studies have shown that ginger has many effects in the body such as antioxidant, anti-inflammatory, antimicrobial, anticancer, antidiabetic, antiemetic, neuroprotective and cardioprotective. In addition to all these effects, the effects of ginger on obesity have been studied for a long time. Obesity is a risk factor for many chronic diseases such as diabetes, hypertension and cardiovascular diseases. Therefore, the prevention and treatment of obesity is important in terms of preventing comorbidities. Various studies have reported that ginger is effective in weight management and obesity prevention. It is thought that ginger has preventive/therapeutic effects on obesity by decreasing lipase enzyme and preventing fat absorption, suppressing appetite, increasing thermogenesis and fatty acid oxidation, decreasing fat storage, lipogenesis and adipogenesis through various mechanisms. In conclusion, ginger is a functional food with important bioactive components. There are in vitro, animal and human studies on weight management. Ginger is thought to have various mechanisms of action on obesity and weight management. Further research on the subject is needed.

**Keywords:** ginger, obesity, functional foods

## Preliminary Data For Identification Of CYP2C19\*17 Allele And Relevant Genotypes In Albanian Population

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### Abstract:

The CYP2C19 enzyme is responsible for metabolism of many drugs, such as: clopidogrel, omeprazole, warfarin, etc. Gene responsible for this enzyme presents several allelic variants, resulting in increased activity or lower activity in the metabolism of respective drugs. Each population represents a specific frequency of allelic variants of the gene encoding this enzyme. CYP2C19\*17 variant, a mutation in the regulatory region of the CYP2C19 gene, causes an increase in transcription of the CYP2C19 gene, producing more enzyme and consequently individuals having this allelic variant are classified as fast metabolizers. Given the importance of the enzyme and allelic variant CYP2C19\*17 in determining the doses of drugs that are metabolized by this enzyme, we have undertaken the study to identify this allele and related genotypes, in a group of individuals in Albanian population (41 individuals), with sequencing method. In the analyzed group of individuals, was found the frequency 18.3% of the CYP2C19\*17 allele and the frequency of the corresponding homozygous genotype CYP2C19\*17/\*17, 4.9%. From the results of the study, about 3.35% of the population is expected to be of homozygous mutant genotype and about 22% of the population is expected to be of the heterozygous genotype for this allele. Compared to the populations of the region and beyond, the Albanian population results in a slightly lower frequency.

**Keywords:** drug metabolism, genetic polymorphism, CYP2C19\*17 allele, dose, Albanian population.

## Current Approaches in Lower Extremity Prosthesis in Child Amputees

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### **Abstract:**

Extremity loss creates functional limitations in the normal development of the child. Congenital limb deficiency is the most common cause of childhood limb loss, with a rate of 1.5 to 4,2 per 10,000 births, followed by acquired amputation due to trauma and disease. Children are the most active prosthetic users and need specific prosthetic components to engage in high-level activities such as running and jumping. The most distinguishing factor between adult and pediatric amputees is the need for prostheses to adapt to the growth of children. Replacement of prosthetic components is usually done annually for children up to 5 years of age, every two years between 5 and 12 years of age, and every three to four years until age 21. For younger children with bilateral knee disarticulations or amputations at the transfemoral levels, short prostheses may be used primarily until the child is able to walk at home in a controlled manner. An ideal prosthesis should provide the optimal knee flexion required for crawling and stable knee extension required for standing and walking. Today most prosthetic manufacturers and suppliers produce pediatric-size adapters, feet, knee joints, and liners. These new pediatric components are welcomed by prosthesis manufacturers and families, who until recently were limited only to SACH foot options for pediatric amputees. Existing materials used in 3D printing are not generally used in child prosthetics, as they do not have the strength and durability necessary for a growing child's use. Modular components suitable for the child's weight and height are not available for all ages. Therefore, it is preferred in most cases to use both pediatric and adult components, pediatric-adult modular prostheses, on a single prosthesis. It is important to produce functional yet affordable, durable, lightweight and modular prosthetic components that will appeal to children's active movements.

**Keywords:** pediatric, amputees, lower extremity, prothesis

## Dendronised Delivery System For The Enhanced Penetration Of Flurbiprofen Across The Blood-Brain Barrier In Alzheimer's Disease

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### Abstract:

Alzheimer's disease (AD) is a progressive brain disorder and age-related disease caused by abnormal accumulation of cytotoxic amyloid- $\beta$  ( $A\beta$ ) plaques. The efficacy of available drugs for the treatment of AD is limited by their poor permeability across the blood-brain barrier (BBB). In this respect the design of a drug delivery system able to penetrate the BBB is likely to improve the management of AD. Dendrimers are hyper-branched polymeric macromolecules that have been shown to be internalised by the cell membrane via adsorptive mediated transcytosis. This study aimed in the integration of Flurbiprofen (FP), a drug used in AD treatment with limited BBB penetration, with a dendronised delivery system to improve penetration across brain endothelial barrier. Dendrons of 2 generations (G0 and G1) were synthesised using solid phase peptide method and were covalently coupled with FP molecules. Mass spectroscopy and FTIR were used for the characterisation of the synthesised drug-conjugated delivery systems. Immortalised brain endothelial cell (bEnd.3) were cultured on Transwell membrane to confluence to mimic the BBB. The validity of this BBB model was proven by measuring the trans-epithelial electrical resistance and confocal microscopy. The permeability of free drug, non-conjugated and drug-conjugated dendron formulations was studied using HPLC technique. The results showed the successful synthesis of dendronised delivery systems and drug bounding and the confirmation of the formation of an impermeable endothelial barrier. HPLC analysis of the penetration demonstrated the ability of the carriers to cross the endothelial barrier (G1-dendronised drug has the highest penetration percentage). This study has demonstrated that the combination of an enhanced permeability of dendronised carriers for FP towards endothelial barriers encouraging its use in the treatment of AD and providing a promise for modifying the disease cause rather than only symptomatic relief.

**Keywords:** Alzheimer's disease; blood-brain barrier; dendrons; drug delivery system; flurbiprofen

#The work was supported by Iraqi Ministry of Higher Education

## Current Approaches To The First Care Of The Newborn In The Delivery Room

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### Abstract:

In order for a healthy pregnancy to end with the birth of a healthy infant, the mother should be monitored regularly from the beginning of her pregnancy, and delivery should take place in centers equipped with the necessary interventions for maternal and infant health. Many physiological changes occur in infants during the transition from intrauterine life to extrauterine life. The most important time in the management of the delivery room is the first minute after the birth, which is called the "first golden minute". During this period, the infant's body temperature should be controlled. Airway patency, respiration and heart rate should be evaluated, and the first respiration should be started if necessary. Also the oxygen saturation should be monitored objectively with a pulse oximeter. First, three important questions must be answered; 1) Is the infant term? 2) Is the infant's tonus good? 3) Is the infant breathing or crying? If the answer to all questions is yes and the infant does not need resuscitation, infant should not be separated from its mother and the should be given normal care. Under the leadership of the Newborn Resuscitation Program, some innovations were made in the management of the delivery room. These innovations; not to do routine aspiration, to ensure the infant's temperature balance, to delay cord clamping for at least 30-60 seconds, even until the first breath. In preterm infants, surfactant should be given only when needed, prophylactic surfactant applications are gradually abandoned with the more widespread use of antenatal steroids. If ventilation support is required for a infant, the initial O<sub>2</sub> concentration should be at the lowest possible concentration (21% for term babies, 21-30% for preterm babies), and the oxygen concentration should be adjusted according to pulse oximetry values and postnatal target preductal saturation values. In conclusion, appropriate delivery room management is indispensable for good survival in infants who need stabilization or resuscitation at birth. However, antenatal care, optimal maternal nutrition, antenatal steroids, and ideal mode of delivery are also very important for infants' survival.

**Keywords:** delivery room care, newborn, term, preterm.

## Bioactive Peptides From Cocoa and By-Products and Their Health Benefits

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### Abstract:

The relationship between nutrition and health continues as a historical process from past to present. Today, human beings want to both meet their nutritional needs and protect their health through these nutrients. This request has revealed the concept of "functional food". In this context, cocoa and its products offer different alternatives. With the fermentation process that takes place during the processing of cocoa beans, it contributes to the formation of both flavor and aroma compounds and bioactive compounds beneficial to health. Although these bioactive compounds are thought to originate mostly from polyphenols, bioactive peptides formed as a result of hydrolysis from oligopeptides in cocoa also have an effect. The production of hydrolysates from cocoa beans and its by-products can be done by autolysis, enzymatic hydrolysis and fermentation methods. Endogenous such as aspartic endoprotease and carboxypeptidase, which are activated during the fermentation of cocoa beans and their by-products, or commercial enzymes break down cocoa proteins into bioactive hydrophilic and hydrophobic peptides. Bioactive peptides are peptide chains of 2-20 amino acids with a molecular weight of less than 6 kDa. Hydrolysates and peptides of cocoa beans and their by-products have bioactive properties such as antidiabetic, antioxidant, antihypertensive, anti-Alzheimer's, antiobesogenic and antitumor. As a result of the evaluation of bioactive peptides that emerge at different stages of fermentation, there is a potential for both the production of beneficial compounds for health and the production of functional foods with good taste and aroma. In addition, as a result of the evaluation of cocoa by-products, both the risk of environmental pollution and economic losses and different usage areas of cocoa and its by-products emerge.

**Keywords:** cocoa bean, fermentation, enzymatic hydrolysate, bioactive peptides, cocoa by-product.

## Detection of biofilm production of *Aeromonas* species isolated from fish<sup>#</sup>

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### Abstract:

The objective of the present study is to determine the biofilm-producing ability of *Aeromonas* species isolated from Rainbow trout farmed in our country, by using three phenotypic methods and comparing these methods. For this purpose, 25 *Aeromonas* isolates (6 *Aeromonas sobria*, 6 *A. salmonicida*, 6 *A. media*, 3 *A. veroni*, 3 *A. bestiarum* and 1 *A. encheleia*) were used in the study. The biofilm producing abilities of the isolates were investigated using Congo Red Agar (CRA), Modified Tube Adherence (Christensen) and Microplate methods. Among 25 isolates, CRA method detected the biofilm production in 17 isolates (4 *A. sobria*, 4 *A. salmonicida*, 6 *A. media*, 2 *A. veroni*, and 1 *A. encheleia*), Christensen method in 12 isolates (3 *A. sobria*, 1 *A. salmonicida*, 4 *A. media*, 2 *A. veroni* and 2 *A. bestiarum*), and Microplate method in 15 isolates (6 *A. sobria*, 2 *A. salmonicida*, 4 *A. media*, 1 *A. veroni*, 1 *A. bestiarum* and 1 *A. encheleia*). With three methods, five isolates (20%) (1 *A. sobria*, 3 *A. media* and 1 *A. veroni*) were found to be biofilm producers, whereas two isolates (8%) (1 *A. salmonicida* and 1 *A. veroni*) were nonbiofilm producers. The results obtained from Pearson Correlation showed that there is a positive significant correlation ( $P < 0.05$ ) between Christensen method and the Microplate method. This present investigation suggests that more than one method should be used for screening the biofilm forming ability of *Aeromonas* species isolated from fish. In addition, high incidence of biofilm production (92%) was found in tested *Aeromonas* isolates. This condition may increase the risk of re-infection and the spread of antibiotic resistance genes in aquaculture facilities. Therefore, there is a need to develop new disease-prevention and control methods against *Aeromonas* infections.

**Keywords:** *Aeromonas* spp., biofilm, fish.

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## Genetics of Syndromic and Non-Syndromic Hereditary Deafness: 3 case studies in the Moroccan population #

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### Abstract:

Hearing loss (HL) is the most frequent sensory disorder affecting 1 in 1000 newborns 50-60% are of a genetic origin related to one of the 220 associated genes. GJB2 is considered as the primary cause of HL, with mutations identified in 43 % of the studied NSHL cases in Moroccan families. The Genomic and Human Genetics Laboratory of the Pasteur Institute of Morocco is studying the genetic cause of deafness in the Moroccan population. With the collaboration of the MitoLab team and the Genetic and Hearing Physiology unit of the Pasteur Institute in Paris, many Moroccan families have had a genetic diagnostic mostly by Whole Exome Sequencing (WES). We present here the genetic results of the WES of 3 families with HL. For non-syndromic HL we present the case of two siblings with profound bilateral deafness identified with a homozygous deletion c.72delA (p.Ile24Metfs\*22) in *MPZL2*. In two recent studies, mutations in *MPZL2* were implicated in deafness as it encodes for a transmembrane glycoprotein implicated in cell-cell adhesion mediation. The same variant was found in patients with a non-syndromic symmetrical mild to moderate HL, from five consanguineous families from Dutch, Turkmen ethnicity from northeastern Iran and Turkish origins. We also present the cases of two other Moroccan families with Syndromic HL, Alport Syndrome (AS) and 3MC syndrome. AS combines renal failure, hearing loss and vision deficiency. 3MC syndrome is a rare autosomal recessive disorder and has a large clinical presentation intellectual disability, hearing loss and distinct craniofacial, umbilical, and sacral anomalies. The WES revealed two novel substitution, c.4153G>C (p.Gly1385Arg) in *COL4A3* in the two sibling with AS. and c.1426G>A (p.Gly476Arg) in the *MASP1* was the cause of 3MC syndrome of the proband of the second family. *COL4A3* is one of the three subunits of the type IV collagen, are the prime structural component Glomerular Basement Membrane (GBM) and a known cause of the syndrome. *MASP1* encodes for lectin complement pathway enzymes MASP-1 and MASP-3. In conclusion the genetic evaluation of our patients using WES, has showed it undoubtful necessity for the better understanding and evaluation of HL in the Moroccan population.

**Keywords:** hereditary hearing loss, whole exome sequencing, moroccan population

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## Analysis of the Health status of Beekeeping in Bulgaria through Questionnaires

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During two years period (2016-2017) were carried out survey of the 72 beekeepers in the form of questionnaire. The aim of the survey was to establish the awareness of beekeepers on the control of honeybee diseases and the effect of used products, methods and means. The questionnaire contains 20 questions, including information on the location of the apiary, available pasture, hive systems, production orientation, the beekeeper awareness, observed diseases and how to control them. Of the surveyed beekeepers 66.7% kept less than 50 bee colonies, 22.2% - between 50 and 150 and only 11.1% - more than 150 colonies. The most common diseases observed by beekeepers were varroosis and nosemosis. About 39 % (38.9%) of beekeepers stated that they have observed varroosis in their apiaries, 16.6% have had a mixed invasion of *Varroa destructor* mite and *Nosema* spp., and 51.4% of beekeepers reported increased winter honeybee colony losses in recent years. American foulbrood (AFB) was observed by 2.8% of beekeepers surveyed, and 7% found Chalkbrood disease. The main indicators that influence on the selection of veterinary medicinal product were price (25%), subsidies under measure B of National Beekeeping Program (20,8%), easy way of application (43%), efficiency (19,4), traces in honey (2,8%) and 6.9% of surveyed beekeepers have not used any drugs against varroosis. Of all surveyed beekeepers 88.9% have used registered veterinary medicinal products and only 11.1% - unregistered VMPs. To control varroosis, beekeepers use mainly VMPs based on pyrethroids (54.2%), essential oils (44.4%), oxalic and formic acids (50%), coumaphos (18.1%), mechanical-biological methods (52.8%). When choosing VMPs, beekeepers are guided by their own experience (62.5%) or the recommendations of other beekeepers (47.7%) and at least by the advice of veterinarians (11.2%). Beekeepers feed most often with honey-sugar hand-made candies (83%), 31% use commercially available carbohydrate-protein supplements, and at least 11% use only carbohydrate supplements or vitamins. Mortality in the apiary was reported by 65% of respondents.

**Keywords:** honeybees *Apis mellifera*, nosemosis, varroosis, questionnaires

## Thermography-Based Assessment to Confirm Genotypic Variation for Abiotic Stress Response in Cyclamen

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Drought and heat stress are major challenges for crop productivity under future climate changes, tolerant cultivars are highly in demand. The use of thermography for estimating crop water status is based on the hypothesis that a sufficient amount of soil moisture facilitates the transpiration in plants resulting in cooler canopy compared to the surrounding air temperature. Traditional measurement approaches (i.e. pressure chambers) used to measure leaf water potential ( $\Psi_{\text{leaf}}$ ), are time-consuming and require experienced operators. To address such challenges, interest in the use of infrared thermal imagery for irrigation scheduling has increased with the accessibility of remote sensing technology. In the present study, from the thermal-RGB images of Cyclamen genotypes, the canopy temperature and crop  $\Psi_{\text{leaf}}$  were evaluated and their relationship was investigated. Also, canopy pixel temperature and drought effects on total, wilted and dead leaves for control and drought stressed were evaluated. Drought caused an acceleration of leaf senescence and paleness due to loss of chlorophyll of the canopy, whereas for the control leaf senescence was noticed only in the lower older leaves. Water restriction led to decreased soil and leaf water content, daily whole plant water consumption and intrinsic water use efficiency. Canopy temperature and  $\Psi_{\text{leaf}}$  were negatively correlated, indicating a higher temperature with severe water stress. This result is expected, as the stomatal closure induced by water stress reduces the transpiration rate, thus lowering evaporative cooling and increasing the leaf temperature. The obtained results indicate that thermal imagery can be used as a non-invasive tool for assessing crop water status at the canopy level of Cyclamen genotypes. Further studies are needed to improve the performance of the sensing technology using advanced data processing methods.

**Keywords:** canopy temperature, Cyclamen genotypes, plant phenotyping, thermal image, water deficit

## Bee Collected Pollen From Romania and Turkey as a Value-Added Product

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### Abstract:

The aim of this study was to determine the botanical origin, phenolics, flavonoids and fatty acids content, antioxidant and antimicrobial properties, of 18 bee collected pollen (BP) samples from Turkey and Romania. Five plant families with predominant pollens (>45%) were found in the Turkish samples, and only three in the Romanian samples. The total phenolic content was determined by the Folin–Ciocalteu method and varied between 16.40 and 41.17 mg GAE/g. The flavonoids were measured by the aluminum chloride colorimetric assay and varied between 2.39 and 7.17 mg QE/g. The highest value of DPPH was 2.93 mmol Trolox/g and 9.64 mmol Trolox/g for the TEAC, whereas the IC<sub>50</sub>  $\alpha$ -Amylase activity was assayed in the presence of soluble starch as substrate, and the highest value of  $\alpha$ -Amylase inhibition was 8.10 mg/mL. We also verified that the presence of the methanolic extract of BP differentially affected the growth of Gram-positive and Gram-negative bacteria under study, strongly depending on the microorganism and the botanical origin of the BP samples used. The fatty acids contents were closely correlated with the above-mentioned parameters especially with the botanical origin and antibacterial activity. Our findings suggest that BP is a rich source of unsaturated fatty acids and bioactive compounds, which can be considered a value-added product. Furthermore, the differences in Turkish and Romanian BP chemical composition is also shown based on their antimicrobial and  $\alpha$ -amylase inhibitory activities.

**Keywords:** palynology, bioactive compounds, antibacterial activity, fatty acids, multivariate analysis

#The research was supported by project 26.526/December 07, 2017

## Therapeutic uses of honey by the population of Beni Mellal-Khenifra region in Morocco.

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### Abstract:

Due to its important floristic, faunistic and landscape diversity, Beni Mellal-Khenifra region has an important and unique beekeeping potential which makes it one of the most interesting regions on the biological and biogeographical plan. The annual honey production in Beni Mellal-Khenifra region is 274 tons. This production is characterized by some honeys with unique and particular biological, palynological and physic-chemical properties that qualify it to be used, in addition to being a natural food sugar, a preventive factor or even a health remedy. The present study aims to investigate the therapeutic uses of honey by populations in five provinces of Beni Mellal-khenifra region. The data is collected through interviews individuals using questionnaires. 200 persons are surveyed (40 persons per province). Results of the survey showed that 84.9% use honey as a treatment for 51 symptoms or diseases. The most cited were respiratory diseases (52%), skin diseases and wounds (15.11%), and gastrointestinal disorders (13.77%). Honey is used alone or diluted in water (30.5%), mixed with plants (66%), and combined with other hive products (3.5%). The oral way (74.48%) is the principal administration way of products. Followed by the local way (22%). The most used honey are: Spurge (*Euphorbia*) honey (43%), Citrus honey (25%) and Multiflower honey (16%). Respondents indicate they prefer to treat themselves with honey instead of drugs because they think that honey is organic and naturel (45%), effective (31%), without side effects (15%), and because it is cited in Quran and Hadith (9 %).

**Keywords:** honey; therapeutic use; apitherapeutic; Beni Mellal-Khenifra region; servey.

## A Coprological Survey of Abaza Breed of Goat in North-East Turkey

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### Abstract:

The Abaza goat is considered one of the local genetic resources, locally produced in the Northeast Anatolia region of Turkey. In Turkey, goat breeding is unstable, and as a result the population declines from time to time. The Abaza goat population is endangered and therefore protected. Parasitic diseases, whose detection is overlooked because they generally do cause chronic infection, are important for animal health and therefore the protection of gene sources. When the literature studies are reviewed, Angora (TR: Ankara or Tiftik Keçisi) and Hair (TR: Kil keçisi) goats are generally studied concerning parasitic diseases in Turkey. It has not been determined that there is any study related to Abaza goats. Together with this study, it aims to contribute to the parasitic studies of Turkish goat breeds and engage attention to the breeding of Abaza goats. In this preliminary research, the fecal samples were collected to determine of parasitic infections in the Abaza goat farm, which is within the borders of Borcka district of Artvin province. The fecal samples were collected from 51 goats and then examined by sedimentation, flotation and Baermann Wetzel methods. As a result of fecal examination, it was determined that all of the goats were infected with some protozoan and helminth species: *Eimeria* spp., *Muellerius capillaris*, *Trichostrongylus* spp., *Strongyloides* spp., *Skrjabinema* spp., *Protostrongylus* spp., *Trichuris* spp., *Dicrocoelium* spp., *Fasciola* spp., *Nematodirus* spp., and *Parabronema* spp.; %100 (51/51), %100 (51/51), %47,05 (24/51), %15,68 (8/51), %11,76 (6/51), %9,80 (5/51), %7,84 (4/51), %3,92 (2/51), %1,96 (1/51) and %1,96 (1/51), respectively in the examined goats. The results of our study show similar results with the parasitic studies of goat breeds conducted in the past from Turkey. In our opinion, this poster presentation has a preliminary research feature; because a more comprehensive reflections including seasonal dynamics will support the studies on the protection of local genetic resources and cause an increase in the population trend.

**Keywords:** Abaza goats, helminth, protozoan

## The Effects of Chronic Stress on Testosterone Hormone and Johnson Score

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### **Abstract:**

Stress is an undesirable situation that occurs as a result of imbalance in body work and nervous system disorder caused by various factors. It is one of the greatest concerns of all societies in the world, and its impact on human health is increasing globally with each passing day. According to the results of the literature; It is understood that acute stress keeps the body alert against external threats and makes the animal or individual ready to fight. However, it has been emphasized that chronic stress causes both psychological and physiological traumatic effects. It is known that industrialization and technological development make life easier, but cause negative effects on health. The reproductive system, which is very sensitive to environmental factors, is the system most affected by this situation. Stress affects the reproductive system through the interaction between the hypothalamic-pituitary-adrenal (HPA) and hypothalamic-pituitary-gonadal (HPG) axes. Especially in men, cause decreased sex hormones, erectile dysfunction, delayed ejaculation, difficulty in orgasm, low sexual desire and low sperm quality, leading to infertility. The increase in the rate of stress and the increase in the rate of infertility every year researchers have led to conduct studies in the field of stress-induced infertility. The testicles, where spermatogenesis and steroidogenesis take place one of the most basic organs for reproduction It is known that glucocorticoids that increase during stress suppress the testicular response to gonadotropins by affecting leydig cells. Stress is an inevitable phenomenon in today's conditions. A number of chemical agents are used in the treatment of disorders resulting from chronic stress. It is seen that these chemicals used partially treat the disorders, but the side effects (especially on the reproductive system) are sometimes serious. Therefore, searches in this area are still continuing.

**Keywords:** johnson score, rat, stress, testosterone.

## The Distinction of Royal Jelly *Apis cerana koreana* against *Apis mellifera ligustica* by the Water-Soluble Proteins

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### Abstract:

Royal jelly (RJ) is a viscous secretion produced by the pharyngeal glands of the worker bees. It determines the development rate of honey bee colonies and stimulates the regeneration of cells and tissues of other organisms. These functions are provided by a complex of components, ones of their proteins. Moreover, the royal jelly of *Apis mellifera* L. honey bees had more protective action to sacbrood virus infection than the RJ *Apis cerana* F. honey bees. However, we cannot clearly know the reason for these different functions still. We focused on the components of the water-soluble (WS) proteins in the RJ of native *A. cerana koreana* against adapted *A. mellifera ligustica* honey bees bred in the Republic of Korea. In this study, the analysis was carried out using the Native SDS PAGE, 2 DE methods using the complex folded proteins in native (non-denatured) condition and linear structure of the denatured WS proteins. Also was done LC-MS/MS analysis. We investigate, that the contents of WS royal jelly proteins *A. c. koreana* were lower at 34 % in denatured and at 5 % in native condition compared to *A. m. ligustica* which can contain the key differences in the biological function of RJ. So, this data supposed the simpler structure of some WS proteins RJ of *A. c. koreana* which could not split into the parts by denatured treatment compared to *A. m. ligustica*. Also, the significant WS proteins with high expression of RJ *A. c. koreana* were less at 57% compared to *A. m. ligustica*. This study for the first time shows the differences in the WS protein composition of RJ *A. mellifera ligustica* and *A. cerana koreana* honey bees in native and denatured conditions. It allowed highlighted unique protein features, which in the future will help to study the molecular mechanisms of the protective action of RJ.

**Keywords:** royal jelly, honey bee, *Apis cerana koreana*, *Apis mellifera ligustica*.

# This research was funded by the Research project of Basic Technologies in Agricultural Science (No. PJ01418002), which was funded by the Rural Development Administration.

## Influence of the Immunomodulator on the Concentration of Reversible Triiodothyronin of Children with Acute Bronchitis in Combination with Euthyroid Sick Syndrome

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### Abstract:

Acute bronchitis remains one of the leading problems of pediatrics around the world in connection with annual high incidence. Often inflammation of the respiratory tract is accompanied by various subclinical changes in concentrations of thyroid hormones. There is a euthyroid sick syndrome (ESS), in particular, a low triiodothyronine syndrome, characterized by a decrease in general and free triiodothyronin and an increase in reversible triiodothyronine (rT<sub>3</sub>). The aim of our study was to investigate the effect of an immunomodulatory drug containing a complex of lyophilized bacterial lysate (Respibron) on the concentration of reversible triiodothyronine in the serum of children with acute bronchitis in combination with euthyroid syndrome. We were examined 43 children with acute bronchitis in combination with ESS (main group). They were divided into 2 groups. 21 children from the main group received basic therapy (I group). And 22 children with acute bronchitis received immunomodulatory drug with basic therapy (II group). The control group consisted of 28 practically healthy children. We found that this drug has a positive effect on the dynamics of rT<sub>3</sub> in the serum of patients. We demonstrated that in the acute period of the disease in both groups there was a significant increase in rT<sub>3</sub> compared with children in the control group to the following values: in group I – 30,21 ng/dl, in group II – 30,43 ng/dl, in the control group - 15.8 ng/dl. In children receiving basic therapy there was a significant decrease in rT<sub>3</sub>, but it did not reach the levels of the control group. In addition, similar changes were observed in children who received immunomodulatory drug as adjuvant therapy. They also had a significant decrease in rT<sub>3</sub>, but in contrast to group I, the values of the hormone reached the concentrations of children in the control group. Thus, the changes we found are directly related to inflammatory reactions in sick children. We consider promising further study of the effect of this drug on immune processes in this disease and study the level and degree of influence on the course of the disease of other thyroid hormones in children with acute bronchitis.

**Keywords:** acute bronchitis, euthyroid sick syndrome, reversible triiodothyronin, children.

## The Relation Between Alexithymia and Eating Disorders

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### Abstract:

Alexithymia, which means the absence of words to express emotion, is defined as difficulty in the expression of emotions. There is no definite information about the cause. It has four main features which are identifying emotions, distinguishing between emotions and body perceptions, symptoms of low imagination, and low self-awareness. Alexithymia is associated with a multitude of diseases like autism spectrum disorder, depression, obsessive-compulsive disorder, schizophrenia, and eating disorders. Thus, studies on alexithymia have been increasing in recent years. Eating disorders are manifested by food restriction, compensatory behaviors, or binge eating because of dissatisfaction with body weight and shape. Also, it contains a lot of questions since it has been less studied than other psychiatric diseases. Although the prevalence of eating disorders varies according to subgroups, it has been reported to be 0,9-3,5%; however, the prevalence has been found to increase gradually in recent studies. It is known that the frequency of eating disorders is higher in women than in men. The relation between alexithymia and eating disorders has been discussed in numerous studies. In a recent epidemiological study, it was concluded that people having eating disorder has a higher rate of alexithymia than people who do not have. Because of the alexithymia's effects on the hypothalamus pituitary-adrenal axis, which is a stress mechanism regulator, it is thought that alexithymia may be associated with an eating disorder. Therefore, eating behaviors are highly influenced by emotional regulation and it is thought that alexithymia potentially affects obesity and binge eating disorder. Furthermore, emotional deficits of anorexia nervosa are thought to indicate alexithymia. Although alexithymia symptoms improved in individuals with eating disorders after treatment, there are also results showing the opposite in some patients. Consequently, it is thought that alexithymia and eating disorders can affect each other in various ways. However, the results of whether alexithymia will recover after treatment for eating disorders are not consistent, and there is a need for more studies about the effects of these two diseases on each other.

**Keywords:** alexithymia, eating disorders, nutrition.

## Queen-Bee Rearing Criteria In The North -East Of European Part Of Russia<sup>#</sup>

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### Abstract:

A queen-bee is responsible for genetic potential, growth and development of a bee colony. Quality of a queen-bee depends on a number of ecological factors. Determining these factors facilitates rearing of queen-bees with high laying ability and high resistance to diseases and other external factors. The aims of this study were to study the factors influencing the production of queen bees and establish the criteria for their production. Methodology. The queens were reared by means of: grafting system, graftless system using the Jenter comb and graftless system using the Jenter comb and feeding the larvae with APIKAR (APIKAR contains Calcium carbonicum, Acidum folicum, Cyanocobalamin which are adsorbed on a lump sugar). The following colonies were formed to carry out the research: 12 breeding colonies, 21 queenless cell-building colonies, 20 drone producing colonies. In the study we have established: In artificial queen rearing the most efficient way is graftless system with use of artificial combs which increases the number of reared queens with the biggest weight. It is best to select queens at the stage of capped cells while discarding cells which are less than 22 mm long. It is recommended to rear queens in the swarming period (May to June) with average daily temperature +16 to + 28°C and the nectar flow not more than 1.2 kg a day, which increases the number of virgin queens by 10-20% and their laying abilities by 16% and a short period of reproductive status change. An important criterion increasing the efficiency of artificial queen rearing is the use of supplementary feeding. A highly effective way is feeding with APIKAR which increases the number of reared virgin queens by 1.7 times and their laying abilities by 1.2 times.

**Keywords:** honey bee, queen, factors.

<sup>#</sup> The work was financially supported by the Ministry of Science and Higher Education of the Russian Federation, grant no. 075-15-2021-1037 (internal no. 15.BRK.21.0001).

## Quality and Reliability Analysis of YouTube Videos About Branched-Chain Amino Acids Supplements: A Pilot Study

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**Abstract:** The branched-chain amino acids (i.e. leucine, isoleucine and valine) (BCAA) play role in stimulating protein synthesis, recovery processes from exercise and protection of mental health after prolonged exercise. However, unconscious intake of BCAA supplements may contribute to the progression of pathological conditions such as renal failure and cancer, especially in unhealthy people. Social media tools such as YouTube and etc. are effective platforms to promote the use of such supplements. The aim of the study was to determine quality and reliability of branched-chain amino acids supplements related English videos on YouTube. “BCAA” and “BCAA supplements” terms were searched as key words and the mostly viewed 100 videos were obtained for each term. Unrelated to BCAA, non-Turkish and duplicated videos were excluded from study. Following the exclusion criteria, 9 videos were selected from 200 videos. The duration of videos, the number of like, the number of views and job of the person in the video were recorded. The quality and reliability of information on videos were evaluated using DISCERN, Journal of American Medical Association (JAMA) benchmark criteria and global quality score. The job of the person in videos was mostly fitness trainer (%88). The mean of DISCERN score was  $41.5 \pm 13.2$ , the mean of JAMA score was  $1.2 \pm 0.4$  and the mean of global quality score was  $2.6 \pm 1.1$ . There was significantly positive correlation between JAMA score and video duration ( $r=0.8$ ,  $p<0.05$ ). According to findings, mostly viewed Turkish videos about BCAA were mostly low and average quality. Sports supplements are products consumed globally, and large-scale studies with much more videos are needed to identify the potential risk.

**Keywords:** branched-chain amino acids, sport supplements, YouTube

## The Effects of Biofilm Formation in Seafood Processing Plants on People Health and Fishery Products

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In seafood industry; biofilm formation is a very important issue due to their harmful effects on both of the quality of processed seafoods and human health. Biofilm forming bacteria can be created a biofilm on the surfaces of the seafood processing plants due to the detrimental effects and pathogenic properties. The most common genus of these biofilm forming bacteria are *Vibrio*, *Pseudomonas*, *Aeromonas*, *Salmonella*, *Bacillus*, *Listeria*. Biofilm can occur on the aqueous surfaces of the seafood processing plants, where bacteria are commonly found and developed easily. Bacteria can be formed a biofilm by attaching to the surfaces of the all seafoods and in all areas of seafood processing plants, in which can not be removed easily. In another words, biofilm forming bacteria can not only be produced biofilm on the different surfaces of seafood processing plants, but also, these bacteria can be developed on the surface of these seafoods, in which they are caused to decrease the safety and quality of seafood products. Therefore, it is necessary to eliminate all these biofilm forming bacteria from the surfaces of seafood processing plants. Otherwise, these bacteria can be contaminated the all of the seafood products, while processing. Depending on the importance of this subject in this review; biofilm forming bacteria, biofilm forming bacteria on the surfaces of the seafoods, biofilm forming bacteria on the different areas of the seafood processing plants, methods used for reducing or eliminating the bacteria from the seafood products and from the contact surfaces of seafood processing plants have been evaluated. As a result, the studies for controlling the biofilm producing bacteria and the methods for removing biofilm from seafood processing plants were investigated.

**Keywords:** Biofilm, seafood, seafood-borne pathogens, seafood processing plants

## The Histological Effect of CoQ10 on Spermatogenesis in Rats

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### Abstract:

The histological effects of CoQ10 supplementation were investigated by examining seminiferous tubule morphometry in rat testicles in this study. For this purpose, a total of 30 Sprague Dawley rats obtained from DEHAM (Ondokuz Mayıs University Experimental Animal Application and Research Center, Samsun Turkey) were used and divided into three groups; control (n=10), vehicle (n=10), and CoQ10 (n=10). The control group was given only pellet feed and water during the study. While the vehicle group was given only olive oil by oral gavage for 23 days, the CoQ10 group was given 20 mg/kg CoQ10 by oral gavage after being dissolved in olive oil for 23 days. At the end of the experiment, rats were euthanized under ketamine xylazine anesthesia. Testicular tissues were removed and fixed in Bouin's solution. Epithelial thickness and diameters of 10 seminiferous tubules were measured for each rat. In addition, histology of the epididymis was evaluated. While the diameter values did not differ significantly between the groups, a statistically significant difference was observed between the control and CoQ10 groups in epithelial thickness ( $P<0.05$ ). Sperm density in the epididymis did not differ significantly between groups. The increase in the thickness of the seminiferous tubular epithelium containing germ cells can be considered as a factor indicating increased spermatogenesis. As a result, this increase in thickness suggested that CoQ10 may have a positive effect on spermatogenesis.

**Keywords:** CoQ10, rat, seminiferous tubule

#This study was supported by Ondokuz Mayıs University Scientific Research Projects Commission (PYO.VET.1904.19.013).

## The Use of Phytonutrients as Alternatives of Antibiotics in Poultry Feed

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### **Abstract:**

The use of antibiotics in poultry feed is a serious public health concern affecting both humans and animals, globally. No specific attention has been given to alternative sources of antibiotics. It is essential to identify and develop effective alternatives that increase poultry performance, promote beneficial microbes, and enrich the immune status of the intestine. Phytonutrients have great significance among the existing alternatives of antibiotics used in poultry feed. Garlic, mint, fennel, oregano, and rosemary are botanicals increasing poultry growth and health status and can either be used as a whole plant, their flowers, stem, or leaves. These botanicals improve the immune system, lowering the impacts of pathogens. Moreover, these natural products promote gut health having no adverse effects on intestinal absorption and liver functions. These are economical, easily available, and eco-friendly natural products. It is a dire need to understand the use of botanicals in poultry feed with other supplements and their results on the health and growth performance of poultry.

**Key Words:** Phytonutrients, Botanical, Antibiotics, Poultry Feed

## Environmentally Concious Nutrition And Green Eating Behavior

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### ABSTRACT

The environment is affected by people's food choices considerably. However, most consumers are not aware of the environmental impact of food production and consumption. The food production sector has a high impact in terms of carbon footprint. Reducing greenhouse gas (GHG) emission asks for raising awareness of people about climate change risks, for improving production technologies and for changing consumer's behavior. The GHG emission is mainly due to the livestock with regard to the farming. Actually, the food accounts for 31% of the total GHG emission in Europe. Food consumption causes significant GHG emission. Behavior changing of people's food consumption can provide for lowering GHG emission. In other words, impelling consumer's behavior towards a more sustainable and climate-conscious buying attitude could play a key role on reducing global GHG emission. In many studies shows that the consumers with a lack of knowledge with regards to product related environmental problems and to the environmental impact of their purchasing choices. In this respect, opinions and manners of people about climate change must be advanced and altering the habits of buying habits must be provided through correct information and communication. At the same time climate neutral production techniques must be taken on by the economic system for bringing to carbon free products to the market. The 'carbon' characteristics of these products must be remarked in the labelling chart to inform of the consumers to make more climate conscious decisions. Moreover, the new approaches for people's understanding of the environmental friendliness of food choices should help to inform people about the impacts of food production from field to table and support behavior change to reduce carbon footprint.

**Key words:** Climate change, environmentally friendly, greenhouse gas emission, food choices.

## When does A Food-Drug Interaction Occur, How does It Affect: Examples from Case Reports

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### Abstract:

Nutrients provide energy for the body and have physiologically beneficial effects. Drugs are needed in metabolic processes in which cellular balance begins to deteriorate throughout life. However, the effects of drugs in the body can be changed by food. Interactions between drugs and foods are likely to occur, as drugs and foods share some characteristics, such as causing toxicity at high doses, altering physiological processes, and being absorbed from similar sites in the gut. The development of the interaction between food and drugs is related to the physiological functions of the individual and the physicochemical properties of drugs, nutrients and nutrients. The interaction results in a clinical change in the pharmacokinetics and/or pharmacodynamics of the drug. Food-drug interactions are based on similar pharmacokinetic and pharmacodynamic principles as in drug-drug interactions. Although the interaction occurs at the stages of absorption, transport, metabolism and excretion of the food and drug, it is largely on the cytochrome P450 enzyme family that metabolizes drugs. Because this interaction is difficult to define by patients, it is difficult to detect until clinical symptoms appear. Case studies in the literature also show that this interaction occurs over time. For example; It has been reported that the INR value increased in a patient who consumed pomegranate juice daily with warfarin, an anticoagulant agent. Similarly, another study showed the interaction of astaxanthin with warfarin. It has been reported that a patient who has been using lithium for 10 years due to bipolar disorder has been using ginseng for 6 months, and the patient has developed acute renal failure and lithium intoxication as a result. Finally, interactions between enteral nutrition and L-dopa have been reported. Since enteral products are elemental products, more attention should be paid to food-drug interactions. For this reason, the determination of possible food-drug interactions should be evaluated with a multidisciplinary approach by many professional groups such as physicians, pharmacists, biochemists, nurses and dietitians. Although the factors causing food-drug interactions have been defined, there are not many case reports showing these interactions in the literature.

**Keywords:** food-drug interaction, warfarin, bioactive compounds

## Association of Obesity with Sociodemographic and Sedentary Lifestyle in a sample of women from Khouribga province of Morocco

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### Abstract:

According to The WHO, obesity is an excessive accumulation of fat in the body. It is currently considered a major public health problem. Evaluate the rates of general and abdominal obesity and analyze the effect of socio-demographic factors (monthly income, number of people per family, profession of the woman, type of family, level of study, number of children per woman) and sedentary lifestyle (Time watching television in hours, walking time in minutes and nap time in minutes) on obesity. Is a cross-sectional survey carried out in the province of Khouribga (Morocco). It was conducted in 2019 among 117 randomly sampled women aged 18 to 65. The anthropometric measurements carried out and calculated are: Weight, height, waist and hip circumferences, blood pressure, body mass index (BMI) and waist/hip ratio (AHR). The prevalence of general obesity (BMI>30 kg/m<sup>2</sup>) and central obesity (TT>0.88) are 47.87% and 79.40%, respectively. Women with more than three children have a higher weight, BMI and waist circumference than women with no or less than 3 children. Spearman's correlation between BMI and number of children is  $r_s=0.386$  ( $p<0.001$ ). Watching TV more than 60 minutes significantly increases weight, BMI and WHR ratio. Spearman's correlation between BMI and time watching television is  $r_s=0.335$  ( $p<0.001$ ). More than 30 minutes of walking reduces weight and BMI. The Spearman correlation between BMI and walking time is  $r_s=-0.303$  ( $p<0.001$ ). Napping more than 30 minutes increases weight and BMI. The Spearman correlation between BMI and walking time is  $r_s=0.239$  ( $p<0.009$ ). The prevalence of abdominal obesity is very worrying, it would be linked to age and the number of children. Obesity is negatively correlated with physical activity and favored by a sedentary lifestyle (television and siesta).

**Keywords:** obesity, sociodemographic, sedentary lifestyle, khouribga.

## The Levels Of Awareness About Child Abuse And Neglect Of Senior Nursing Students

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### Abstract:

Aim of the study: This study has been conducted to determine the level of awareness of senior nursing students about child abuse and neglect. Method: This descriptive study has been conducted on the students who have been studying in the 4th year of nursing faculty of a university, during the fall semester in 2021-2022 academic year. The samples cover 120 students (100%) who met the study criteria. The data were obtained by using "The Identification Information Form" and "Child Abuse and Neglect Awareness Scale". The statistical analysis of the data was performed using 21.0 SPSS package program, applying the frequency, percentages, the Student's t-test and One-way Anova test analysis of variance methods. Findings: It was determined that the average age of the students is  $21.36 \pm 1.27$  and 70.8% of students were female. The overall average scores of the students for the "Child Abuse and Neglect Awareness Scale" were  $50.30 \pm 7.36$ . It was found that there was a significant difference between gender and mean score in the "Child Abuse and Neglect Awareness Scale" ( $p < 0.05$ ). It was determined that 31.7% of the students encountered child abuse and neglect during their clinical education, 50% of the abuse types were physical, 31.6% were emotional, 13.2% were sexual and 5.3% were economic abuse. Conclusion: It has been determined that the nursing students' ability to recognize the symptoms and risks of child abuse and neglect is not at an expected level, they are not aware of their legal responsibilities about child abuse and neglect and need education.

**Keywords:** child abuse and neglect, nursing, students, awareness level

## Recent Advances in Alfalfa Silage Inoculants to Improve Fermentation Quality and Methane Mitigation of Feed.

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### ABSTRACT

Alfalfa is a principal source of protein on farms. Due to extensive proteolysis of alfalfa silage the protein utilization efficiency in ruminants is low. Alfalfa silage has poor fermentation quality because of its high buffer capacity and low water soluble carbohydrates (WSC) but can be improved with inoculants. A combination of hydrolysable tannin (chestnut tannin) and condensed tannins (quebracho tannin) at a low level can reduce proteolysis, improve N utilization efficiency and CH<sub>4</sub> mitigation of alfalfa silage feed without adverse effects on ruminal fermentation microbiota and patterns. Lactic acid producing bacteria (LAB) inoculants (LAB YX or *Lactobacillus plantarum* strain ZZUA493) and vacuuming had improved the fermentation quality by increasing lactic acid (LA) content, pH and NH<sub>3</sub>-N content decreased, and no butyric acid (BA) was detected. LAB inoculants were effective in reducing mycotoxins (AFB<sub>1</sub> and DON) in silage alfalfa at 90 days of ensiling. Naturally ensiled alfalfa silage having high-moisture is more prone to rot. The process of spoilage of high moisture alfalfa silage can be delayed by adding LAB YX. It inhibits the growth of undesirable microorganisms (*Garcilla* and *Anaerosporobacter*) to a certain extent by increasing the abundance of *Lactobacillus*, promoting lactic acid and acetic acid accumulation, lowering pH, inhibiting butyric acid (BA) formation. The fermentation quality had improved by adding molasses. Enterococcus and Lactobacillus were the dominant, resulting in a pH reduction from 5.16 to 4.48 and undesirable microbes were inhibited, resulting in lower propionic acid (PA), BA, and NH<sub>3</sub>-N production and tastes of alfalfa silage also improved with molasses. Molasses additive 3% obtained the ideal pH value <4.5 and the best condition for long-term preservation. In baled alfalfa silage harvested late in an actual production process, the *Lactobacillus plantarum* and molasses improved digestibility, fermentation quality, and preserved more true protein. An alternative additives for improving the alfalfa silage fermentation profile are fructose and pectin that improved the fermentation quality throughout the ensiling period. Alfalfa silage treated with 60 ml/kg DM of lemon-seed essential oils (leo) C60, C120 and equal mixed of them (M60). Dry matter (DM) content was greater for leo60, NDF concentration was decreased in leo120 than control. Addition of lemon-seed essential to alfalfa silage decreased the loss rate of organic matter, DM and increased the degradability potential of alfalfa silage.

**Keywords:** inoculants, alfalfa silage, fermentation quality, ammonia-nitrogen content

## Evaluation of Early Dietary Transition Strategies From Forage To Complete Pelleted Diet In Fattening Lambs

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### Abstract:

Feed transition from high forage to high concentrate diets is a critical period because of time and resources utilization during this period. Improper management of this transition phase can lead to digestive upsets lead to acidosis, damage to rumen epithelium, and consequently lower production performance. This study aimed to reduce the dietary transition period from 2 weeks to examine the post transitional effects on feed intake, growth performance, nutrient digestibility and changes in blood metabolites of fattening lambs fed on P-TMR. Forty fattening lambs were divided into four groups on a live weight basis ( $24 \pm 2$ ) and were assigned randomly to one of the four dietary treatments containing 15% wheat straw (WS) with 32% NDF (H-NDF) divided 10 animals per treatment. However, each dietary treatment was based upon the length of the adaptation period (0 day, 3 days, 7 days and 15 days for each dietary treatment). The experiment lasted for 82 days (15 days for dietary transition, 60 days for growth data, 2 days for digestibility cages adaptability, 5 days for digestibility data collection). The average daily gain (ADG) 0.268 vs. 0.232 kg/day of the lambs transitioned on 03 days vs. 00 day (abruptly) were higher ( $p < 0.05$ ) than the lambs (0.207 vs. 0.203 kg/day) transitioned on 07 days vs. 15 days. Furthermore, feed-to-gain ratio (F:G) was higher ( $p < 0.05$ ) in the 07 days and 15 days transitioned lambs when compared with 03 days and abruptly transitioned lambs. Digestibility coefficients, nitrogen balancing, blood metabolites, hepatic enzymes, and hematological parameters were similar ( $p > 0.05$ ) across all treatments. In conclusion, animals fed on P-TMR and transitioned on 03 days and abruptly improved growth performance as compared those transitioned on 07 days and 15 days without exerting any adverse effects on blood metabolites, liver enzymes, or hematological parameters. The improved performance could be attributed to improved dry matter intake (DMI), rumen health and fiber digestibility.

**Keywords:** pelleted TMR, dry matter intake, growth performance, NDF.

# This study was financially supported by Punjab Agriculture Research Board (PARB) project number (PARB PROJECT NO. 650).

## The Investigation Of Antimicrobial Efficacy Of Exosomes From Umbilical Cord And Adipose Tissue Derived Mesenchymal Stem Cells

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### Abstract:

Recently, it is known that microvesicles and also exosomes of MSCs show the features of MSCs such as tissue healing, regulation of the immune system and suppression of the inflammatory process. The aim of this study was to investigate the antimicrobial activity of exosomes derived from MSCs against *Escherichia coli*, *Streptococcus mutans*, *Enterococcus faecalis*, *Candida albicans*. For this purpose, exosomes were isolated from umbilical cord and adipose tissue derived MSCs culture medium and identified by Scanning Electron Microscopy and Western blot analysis. The antimicrobial activities of the exosomes were tested against *E. coli*, *S. mutans*, *E. faecalis* and *C. albicans* by Kerby-Bauer Disk Diffusion and broth microdilution methods. When the antimicrobial activity of the exosomes from umbilical cord MSCs was evaluated in disc diffusion test; inhibition zones were 8.85 mm, 8.99 mm, 11.72 mm and 10.81 mm for *E. coli*, *S. mutans*, *E. faecalis* and *C. albicans*, respectively. Also, the inhibition zones of exosomes originating from adipose tissue MSCs for *E. coli*, *E. faecalis* and *C. albicans* were 8.62 mm, 10.88 mm and 9.60 mm, respectively. The MIC value of the adipose driven MSCs' exosomes for *E. coli* and *S. mutans* were determined as  $100 \times 10^6$  exosomes/ml and also for *E. faecalis* and *C. albicans* were  $50 \times 10^6$  exosomes/ml. While the MIC value for *E. coli* was determined as  $82 \times 10^7$  exosomes/ml and MIC values for *S. mutans*, *E. faecalis* and *C. albicans* were determined as  $41 \times 10^7$  exosomes/ml of umbilical cord derived MSCs. As a result, it was found that exosomes obtained from both sources showed weak antimicrobial effects on microorganisms and it was not superior to commercial antimicrobials used.

**Keywords:** Antimicrobial effect, exosome, mesenchymal stem cell

## Intelligent analysis of human biological tissue oxygen status abnormalities in lower limb ischemia

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### Abstract:

Every year the application of noninvasive diagnostic methods becomes more actual. One of the significant directions is the development of optical methods of human limb blood flow monitoring using multichannel spectrum analyzer. Deviations in the status of blood flow in limb vessels may be associated with the development of many dangerous pathologies. The aim of the study is to create a prototype of an intelligent diagnostic optical system for noninvasive monitoring of human lower limb tissue oxygen saturation abnormalities. The formation of groups of subjects with different risk of blood supply disorders was performed using a mathematical analysis of the results obtained by the principal component method. The multisensor optical system contains two modules. The first module - optoelectronic - is an eighteen-channel integral optical analyzer of visible and near-infrared spectra. The second module - information-computer module - performs displaying of the obtained measurements and processing of the obtained data array. Registration of optical system readings was performed in conditions of rest, low-intensity physical activity, and in the process of the subject's recovery after physical activity. Physical activity causes significant changes in limb blood flow and disturbances in hemodynamics, because of which pathophysiological conditions can be more clearly expressed, detection of which helps to diagnose latent diseases. The performed mathematical analysis of the measurement results allowed us to reveal different tendencies in the changes of limb blood flow before and after exercise. We obtained groups of examinees with different response to physical load, visualization of the ranking results was performed, which allowed us to reveal hidden regularities in changes of limb blood flow according to optical sensors readings at different time points of the experiment. The results obtained testify to the possibility of intelligent automated detection of tissue oxygen saturation abnormalities in human lower limb ischemia and allow medical personnel to make a preliminary decision on the presence or absence of pathology.

**Keywords:** Intelligent diagnostics, multisensory system, blood flow, lower limb ischemia.

## Incidence of Foot Diseases in Beef Cattle in Kirikkale Region

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### Abstract:

This study was carried out in order to determine the current diseases and to determine their causes by examining a total of 2058 beef cattle of different ages and breeds in 5 different scale farm enterprises in the Kirikkale region in May-August 2020. The results obtained from the comparison of the incidence of the diseases and the causes of the diseases and the localization of the diseases according to the races and the effects of the factors related to the farm management of the diseases and the incidence of the diseases were examined. Foot disease was found in 75 (3.64%) of all beef cattle examined in the study. It was observed that 54 (72%) of the identified diseases were caused by long-term nutrition, 15 (20%) were caused by ration problems, 4 (5.33%) were caused by trauma, and 2 (2.66%) were caused by other factors. Identified diseases were determined as sole ulcer, nail deformations, splayed wide claw, and subclinical laminitis, respectively. According to the available data obtained, it was determined that the majority of the diseases detected were caused by farm management reasons. In the detected diseases, hoof care in animals with deformed claws and hoof care and medical treatment in sole ulcer and subclinical laminitis cases are recommended. As a result, it has been concluded that the incidence of foot diseases in beef cattle will be reduced by arranging the ration according to the needs of the animals, giving importance to barn hygiene, and regular claw trimming in long-term beef cattle. In this context, recommendations were made to the farm managers and animal caretakers visited.

**Keywords:** beef cattle, foot disease, hoof care, incidence.

## Turmeric and Its Effects on Health

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### Abstract:

Turmeric has a long history of use to improve the flavor and storage of foodstuffs, due to its distinctive yellow color, taste, and antioxidant potential. In ancient times, turmeric was used in the treatment of various inflammatory diseases, liver and digestive system problems, and wound healing. In the 1970s, the first research on the health benefits of curcumin, the active ingredient in turmeric, began. In this and subsequent studies, curcumin has been shown to have multiple therapeutic potentials. On the other hand, curcumin offers promising potential for therapeutic development with a stable metabolism and low toxicity. The purpose of this research is to compile the health effects of turmeric as a therapeutic agent. Within the scope of the research, articles published in 2017 and later, including the words turmeric and health, from the PUBMED database were reviewed. As a result of the research; Curcumin has been shown to be a powerful antioxidant. Many mechanisms express antioxidant activity as the ability to bind free radicals, donate hydrogen atoms, and neutralize free radicals by donating electrons. Curcumin shows antioxidant activity by scavenging various reactive oxygen species such as superoxide radicals, hydrogen peroxide and inhibiting lipid peroxidation. It is considered that curcumin may have great potential for treating inflammatory diseases. Curcumin in studies; It has been seen that it has potential effects on inhibiting proinflammatory transcription factors and reducing proinflammatory cytokines. It is assumed that curcumin may also have positive effects in the prevention of Alzheimer's disease through mechanisms such as reducing inflammation, preventing amyloid beta plaque accumulation and reducing the hyperphosphorylation of Tau proteins. The active ingredient of turmeric can inhibit angiogenesis and cancer cell growth, suppress cancer cell metastasis and induce apoptosis; Thus, it is reported that it may have potential anti-cancer effects. It has been reported that curcumin can alleviate liver fibrosis and cirrhosis and increase endothelial function. In conclusion; Curcumin, the active ingredient of turmeric, is thought to have potential effects on health and disease prevention through different mechanisms. More human studies are needed for a clear understanding of the mechanisms involved.

**Keywords:** turmeric, curcumin, therapeutic effects

## Epidemiological and clinical characteristics of COVID-19 in Casablanca

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### Abstract:

This is a retrospective study that was conducted to describe the epidemio-clinical characteristics of subjects who contracted COVID-19 during this pandemic outbreak in Casablanca (Morocco) over a period of 05 months (from November 01, 2020 to March 31, 2021). This study aimed to focus on risk factors, potential clinical signs of COVID-19 and its early confirmation while considering the importance of cycle threshold (Ct) values. Patients with suspected COVID-19, case contacts (subjects with recent contact with COVID-19) with potential clinical signs such as fever, cough, fatigue, diarrhea, loss of taste and/or smell and other symptoms (acute respiratory distress syndrome, chest pain, nasal congestion) were included. The diagnosis was confirmed by RT-PCR. Among 4569 samples analyzed, 967 cases were confirmed positive for COVID-19. The median age of the subjects was 48 years (range: 3-91 years). Infection was more frequent in "young adults". Female gender was predominant, and the sex ratio (M/F) was 0.7. However, the degree of severity of the disease varied from mild to moderate not requiring hospitalization to more severe forms (subjects with comorbidities) requiring urgent medical attention. In general, there was no specific treatment for SARS-CoV-2, and its management was generally multidisciplinary. Nevertheless, semi-quantitative measurements of viral load (by extrapolation) by cycle threshold (Ct) values (biomarker) played a crucial role in guiding management and the degree of infectiousness. It should be noted that, the Ct is inversely proportional to the viral load present in the sample tested. In light of our results, four (4) potential clinical signs suggestive of SARS-CoV-2 infection were reported by the patients, and were statistically significant ( $p < 0.001$ ) and greatly contributed to the important decision making during the analyses. These clinical signs included loss of taste and/or smell, fever, fatigue and cough.

**Keywords:** COVID-19, SARS-CoV-2, clinical manifestations, cycle threshold, RT-PCR

## Extraction, Characterization And Properties Of The Gel Of Aloe Vera (*Aloe Barbadensis* Miller) Cultivated In Algeria

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### Abstract:

Aloe vera is well known for its considerable medicinal properties. The present study was undertaken with the aim of evaluating some morphological parameters, leaf dimensions, gel yields, screening of important phytochemical compounds, antioxidant capacity and antibacterial activities of Aloe vera leaf extracts against *Staphylococcus aureus* and the yeast *Candida albicans*. This work describes the microbial quality and physicochemical characterization of the mucilaginous gel extracted from the filets. Gel was extracted by hand-fileting the leaves and pressing the resulting filet. Microbial quality was investigated by enumerated aerobic mesophilic bacteria, and total coliforms as well as pathogenic bacteria, moulds and yeasts. The mean gel yield was 40.36% from the whole filet. The fresh gel had a moisture content of **97.65 %** a pH of 5.84 and 0.05% acidity expressed as malic acid. The ash content was **3.35 %** in the gel. the Brix value of aloe vera gel was 1.336 and conductivity shows value of 4.09 ms/cm. Aloe gel was found to have a fat content of **0.26%**. Most pathogen microorganisms were absent in the gel, suggesting its good microbial quality. Qualitative phytochemical screening revealed that the level of phenolic, flavonoïde and tannins compounds in Aloe vera gel was 1.95 mg Eq AG/ mL, **0.85 mg Eq Q/mL** and **0.23 mg Eq Cat/mL** respectively. Further, the in vitro antioxidant activity of Aloe vera gel showed significant antioxydant activity half maximal inhibitory concentration = 10.198 µg/mL. Among the microorganisms tested, maximum growth suppression was observed in *S. aureus* (**20 mm ± 0.57**) when compared with *Candida albicans* (**12 mm ± 0.45**). Overall, this investigation has provided a succinct resume of information regarding the physicochemical properties and biological activity of A. vera gel. The methods and data presented are the first steps towards developing quality criteria for A. vera leaf gel. It would be worthwhile embarking on an intensive scientific experimentation and investigation on this valuable medicinal plant and to promote its large-scale utilization.

**Keywords:** Aloe vera, Antioxidant activity; antimicrobial activity, gel, physicochemical properties, phytochemical analysis.

## Synthesis of a Glutathione Decorated Dendrimer for Improved Drug Loading and Penetration of Methylprednisolone Across the Blood-Brain Barrier

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### Abstract:

Methylprednisolone (MP) is a synthetic glucocorticoid used for its anti-inflammatory effect in the treatment of brain inflammation. MP, however, penetrates the blood- brain barrier (BBB) poorly. This limitation has conventionally necessitated high systemic doses of MP to be administered for treating brain inflammation, leading to significant adverse effects. Using specific strategy such as carrier system can enhance drug penetration. Dendrimers possess highly controlled chemical structures, uniform molecular weights and a large number of available peripheral functional moieties for drug attachment, making them versatile drug carriers. The aim of this study was to synthesize a novel drug carrier for MP to improve its loading and penetration through the BBB. In addition, toxicity studies were performed to identify any cytotoxic effects caused by this carrier system. Using solid-phase synthesis, a novel MP carrier system based on dendrimers was synthesised. To improve its penetration across the BBB, the moiety is decorated with glutathione (GSH) as targeting ligand for enhanced cellular uptake. Mass spectrometry and FTIR results indicated successful synthesis of the carrier and the loading of MP molecules on the carrier. Together, the LDH and MTT cell viability assays indicated that toxicity levels were within the acceptable ISO cytotoxicity guideline limit and so it is considered safe.

**Keywords:** Drug delivery, Blood-brain barrier, Methylprednisolone, Dendrimers

The project was financially supported by the Ministry of Higher Education and Scientific Research in Iraq represented by the Iraqi Cultural Attaché in the UK.

## Usage Areas Of Virtual Reality Application In Children's Health: Being A Child Where Reality And Imagination Cross

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### **Abstract:**

Virtual reality; It is defined as a simulation model that gives its participants a real feeling and allows mutual communication with a dynamic environment created by computers. Virtual reality technology, which was first used for entertainment purposes, is now used in many fields such as education, health, tourism, design and trade. It is stated that virtual reality application will have an important place among the health technologies used to maintain the healthy state of individuals, to improve diseases, to delay or prevent the onset of health problems in the coming years. The place of virtual reality application in health services varies. It is used in physical and psycho-social rehabilitation, clinical psychology, diagnosis and treatment in surgical applications, care practices and patient education. The situation is similar in child health practices. In addition, the intense fear, pain and anxiety experienced by children of all age groups during diagnosis, treatment, care practices and painful medical interventions make the procedure difficult, increase the complications by prolonging the time of the application to the patient, and reduce the comfort of the patient. For this reason, in studies conducted with children using virtual reality technology today, it is seen that this application reduces pain and anxiety in children, increases their quality of life and facilitates the recovery of diseases. The aim of this study is to give information about the usage areas of virtual reality application in child health and to examine the effect of virtual reality application on child health in line with the literature.

**Keywords:** virtual reality, healthcare, child health

## Lifestyle Behaviors Affecting Fertility in Women and Midwife Responsibilities

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### Abstract:

Fertility; the capacity to reproduce and conceive. Many factors affect fertility. The main factors affecting fertility are the age of men and women, and the frequency of coitus and lifestyle behaviors. Lifestyle behaviors are important for the continuation of general, reproductive and sexual health. Lifestyle is the correctable factor that is under the control of the person and it increases well-being. Nutrition, weight control, exercise, coping with stress, usage of tobacco, consumption of caffeine, environmental factors, risky sexual behaviors, contraceptive use are some of the lifestyle behaviors that affect fertility. These behaviors can affect fertility both positively and negatively. Individuals who are aware of the effects of these behaviors on fertility can change their negative/unhealthy lifestyle behaviors and engage in these behaviors by developing positive/healthy ones. Quitting smoke, regulating eating habits, maintaining weight control, coping with stress positively can be given as examples of healthy lifestyle behaviors. In the preservation and development of fertility, it is important and necessary to inform women about positive/healthy lifestyle behaviors, to increase their awareness, to have and maintain positive lifestyle behaviors. Midwives, who have an important place in the team of the provision of health services, have great responsibilities in this regard. Midwife should collect data on the individual characteristics, lifestyle behaviors and factors affecting fertility of women in childbearing age, determine their information needs, and make planned teachings on the subjects that couples need. Ensuring the motivation of couples/individuals is also important in the effectation of fertility education on lifestyle behaviors and its continuation throughout life.

The purpose of this article; The aim is to draw attention to the importance of informing women about lifestyle behaviors that affect fertility, raising awareness, and the responsibilities of midwives in gaining/maintaining positive lifestyle behaviors.

**Keywords:** women, fertility, lifestyle behaviors, midwife

## Nutrition Education For Individuals With Type 2 Diabetes Mellitus

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### Abstract:

Type 2 diabetes is an increasingly important public health problem. Apart from medical treatment, nutrition is very important for diabetes control. The aim of this study is to examine the effect of nutrition education applied to individuals with type 2 diabetes on the level of nutrition knowledge. A questionnaire was applied to individuals with diabetes. In addition, questions were asked about the level of nutrition knowledge before and after the training. 60.8% of the individuals are women and 47.1% are 45-55 years old. When the diabetes diagnosis year of individuals is examined; 45.1% had Type 2 diabetes for  $\leq 1$  year and 54.9% for  $>1$  year; it was determined that the majority of them used oral antidiabetic (80.4%). After the nutrition education, the knowledge level of the individuals whose diabetes age was  $\leq 1$  year increased after the education ( $p > 0.05$ ). Similarly, the knowledge level of those with diabetes  $>1$  year after education increased ( $p < 0.05$ ). When the three groups that make up the total score of the nutritional knowledge level are examined; it was found that individuals with both  $\leq 1$  year and  $>1$  year had a statistically significant increase in their health breakfast and health menu scores after the training; it was determined that the score of the foods for carbohydrate content decreased ( $p < 0.05$ ). Nutrition education for Type 2 diabetic patients is effective in improving their nutritional knowledge. This low-cost method may be an effective added method to control blood glucose and thus reduce diabetes complications and diabetes-related comorbidities in the future.

**Keywords:** type 2 diabetes, nutrition education, carbohydrate

## Methods Used in Detection of Carbapenemase Production

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### **Abstract:**

In recent years, the increase in hospitalization rates and the prevalence of hospital infections have made it difficult to control infections with resistant bacteria. Carbapenem-resistant Enterobacteriaceae family members are frequently isolated among nosocomial infections. Rapid interpretation of culture results and rapid and accurate reporting of resistance will facilitate the control of these infections. The most common mechanism of resistance to carbapenems is the production of carbapenemases. In this review, it is aimed to examine the methods used in the detection of resistance in carbapenemase producing isolates. Carbapenemases include class A, class B, and class D beta-lactamases in the Ambler classification. Class D beta-lactamases are more common in Turkey in epidemiological studies. In particular, OXA-48 is the most common carbapenemase. The phenotypic and genotype of carbapenemases can be determined by many methods. It is phenotypically defined by combined disk diffusion test, biochemical tests, immunochromatographic methods, modified Hodge test, chromogenic media and MALDI-TOF MS. Resistance gene regions can be detected by polymerase chain reaction or sequence analysis, which is one of the genotypic methods. Combined disk diffusion test is the most preferred method because it is easy to apply, low cost, and standardized. Other phenotypic tests are superior to the combined disk diffusion method in that it gives faster results. However, many tests are insufficient to detect resistance in some strains. Genotypic tests are not frequently preferred because they require high cost and technical infrastructure. Rapid and accurate detection of resistance mechanisms is required for the control of infection with resistant microorganisms. There is a need to develop new techniques with higher sensitivity and specificity compared to the standard method.

**Keywords:** Carbapenemase, Enterobacteriaceae, Nosocomial infections

## The Effect of *Lactobacillus acidophilus* Supplementation on Some Macro-Mineral Levels in Obesity-induced Rats with High Fat Diet

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### Abstract:

In this study, it was aimed to investigate the effect of *Lactobacillus acidophilus* supplementation on some macro mineral changes in the serum of rats fed a high-fat diet. The study materials consisted of 28 healthy Sprague-Dawley male rats and were given food and water ad libitum throughout the study. 1st group control group was fed with standard rat (SD) chow, 2nd group was fed with high-fat diet (YYD), 3rd group was fed with SD chow and supplemented with *Lactobacillus acidophilus*, 4th group was fed YYD and supplemented with *L. acidophilus* created the group. Weights were weighed at the beginning of the study and at the end of the 12-week study. Blood samples were taken from the heart under general anesthesia. Sodium (Na), potassium (K), chlorine (Cl), calcium (Ca), iron (Fe), phosphorus (P) and total cholesterol (TK) and triglyceride (TG) levels in serum were measured by spectrophotometric method in an autoanalyzer device. At the end of 12 weeks, it was determined that the weight changes in rats were the lowest in group 3 compared to group 1 ( $P>0.05$ ), group 2 fed YYD was the highest, followed by group 4 ( $P<0.05$ ). Compared to the control group, TG and TK levels increased significantly in group 2 fed with a high-fat diet ( $P<0.05$ ), and decreased significantly in groups 3 and 4 with probiotic supplementation ( $P<0.05$ ). It was determined that the difference between the Na, K and P levels determined in the groups was not statistically significant ( $P>0.05$ ). It was determined that the Cl level was increased in the other groups compared to the control group ( $P<0.05$ ). Compared to the control group, the Ca level increased in the HYD (group 2) group ( $P<0.05$ ), and decreased in groups 3 and 4 ( $P<0.05$ ). It was determined that the Fe level was increased in group 2 ( $P<0.05$ ) compared to the control group, and decreased in groups 3 and 4 compared to group 2. ( $P<0.05$ ) As a result, it was determined that feeding with a high-fat diet caused obesity with a significant increase in body weight, TK and TG levels, and probiotic supplementation had a positive effect on reducing body weight, TK and TG. It was determined that some macro mineral (Fe, Cl and Ca) levels were affected in obesity caused by high-fat diet. It was concluded that *Lactobacillus acidophilus* probiotic supplement has a positive effect on obesity caused by a high-fat diet and can be recommended.

**Keywords:** *Lactobacillus acidophilus*, obesity, macro minerals

## Development of Intelligent Methodology for Ranking Breast Milk Based on Electrochemical Methods of Analysis

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### Abstract:

Breast milk is a source of nutrition for a baby in the first year of life and contains a complex of biologically active substances that affect growth processes, provide a powerful immunological, anti-infective, anti-allergic and anti-oxidant protection. Breastfeeding is of great importance for the development of psycho-emotional connection between the nursing mother and the child, which cannot but affect the formation of the person as a personality and his socialization in later years of life. The aim of the work was to develop an express system for monitoring the quality of breast milk, allowing to significantly reduce the time spent on analysis. The main method was to measure the EMF of an electrochemical system consisting of electrochemical sensors immersed in an electrolyte solution. Ion-selective electrodes with cross-sensitivity to the components of the analyzed solution were used as sensors. A system of eight electrodes sensitive to  $H^+$ ,  $Na^+$ ,  $K^+$ ,  $NO_3^-$ ,  $Cl^-$ ,  $F^-$ ,  $Ca^{2+}$ , and  $NH_4^+$  ions; a reference electrode, a switch to connect the electrodes, and a voltmeter were used to analyze milk samples. The EMF of the system was measured by successively immersing the electrodes into the milk samples and recording the obtained value. Machine learning methods, such as the principal component method, were used to process the data obtained. As a result of the analysis, the possibility of creating a "digital image" of breast milk, the ranking of breast milk groups depending on the functional state of the mother at the time of decanting was shown.

Thus, the developed intelligent method of breast milk ranking based on electrochemical methods of analysis is an effective method for monitoring the effectiveness of breastfeeding of infants under 1 year of age.

**Keywords:** breast milk, electrochemical system, ion-selective electrodes, machine learning

## Effective Application Frequency of a Honey-based Gel for Wound Healing in Rabbits

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### Abstract:

Wound healing is a complex process, which is influenced by multiple factors. Wound treatment remains an important area of research in this field. The use of natural products for alternative treatments is increasingly used in recent decades. This study is divided in two parts: The first one is "*in-vitro*" which was reserved to the phytochemical characterization of five types of honey and the evaluation of their antibacterial activity against three bacterial strains in order to choose the best of them to be used in the second part of our experimentation which is "*in-vivo*"; it was focused on the determination of the effective application frequency of a honey-based gel in the healing of infected excisional wounds in an animal model. Five male rabbits of New Zealand breed (*Oryctolagus cuniculus*) of an age between 2 and a half and 4 months, with an average weight varying between 1 and 2.3 kg were used in this experiment. The *in-vitro* results showed that the honey of Harmela is the richest with:  $223 \pm 3,60$  GAE/100g of honey of total polyphenols,  $220 \pm 3.05$  QE/100g of honey of flavonoids,  $28.66 \pm 3.05$  mg TAE /100g honey of hydrolysable tannins and  $137.66 \pm 2.51$  CE/100 g of honey of condensed tannins, and has the most powerful antibacterial activity compared to the other types of honey with inhibition diameters of 5 - 20 mm against *Pseudomonas aeruginosa*, 5 - 20 mm against *Escherichia coli*, and 5 - 20 mm against *Staphylococcus aureus*. Morphometrically, the wounds treated twice a day presented a better rate of contraction ( $92.57\% \pm 4.20$ ) and a period of total healing the most reduced ( $16.5 \pm 1.5$  days) compared to their control counterparts and those followed by the other two frequencies of application. In conclusion, our results confirmed that the application of Harmela honey-based gel twice a day accelerates the healing of infected excisional wounds.

**Keywords** : Harmela honey, honey based gel, healing of infected excisional wounds, frequency of application, antibacterial effect.

## Prevalence, Associated Factors and Antibiotics resistance of Staphylococci Isolated from Patients with Urinary Tract Infection in Casablanca, Morocco.

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### Abstract

The aim of this study is to evaluate the susceptibility profile and resistance detection in uropathogens *Staphylococcus* species isolated from medical analysis laboratories in Casablanca, Morocco. This study was a retrospective study in which a total of 4374 patients who visited medical analysis laboratories in Casablanca city, for urinalysis test from **01 January 2017 to 30 December 2020**. The culture was performed according to the usual techniques, uropathogens *Staphylococcus* species isolated previously by standard microbiological methods were subjected to antibiotics susceptibility testing using VITEK 2<sup>®</sup> COMPACT 15 system (*bioMerieux, Marcy-l'Étoile, French*) and the Muller Hinton agar (*Bio-Rad, Marnes-la-Coquette, French*) diffusion technique, according to the recommendations of the Antibiogram Committee of the French Society of Microbiology. The statistical analysis was performed using Microsoft Excel (**Microsoft 2016**). During our study, we reported 18% of UTI, UTI was more frequent in female 483 (63%) than male 289(37%). The mean and standard deviation age of the participants was 27.4 (SD 34.77 ± 31.6) years. Of all the strains isolated from urine specimen, the prevalence of uropathogens *Staphylococcus* species was 37,61%. Coagulase-Negative Staphylococcal (CNS) was significantly more prevalent with 92,68%, *Staphylococcus saprophyticus* was the most frequently isolated CNS (39,47%), followed by *Staphylococcus epidermidis* (*S. epidermidis*) (26,32%) and *Staphylococcus heomolyticus* (13,16%). On the other hand, *Staphylococcus aureus* was also isolated but with very low proportion 7,32%. Methicillin resistance *S. aureus* (MRSA) was observed in 66 % of *S. aureus* isolates. All *S. aureus* isolates were susceptible to aminoglycosides, quinolones antibiotic, erythromycin, linezolid, cotrimoxazole, vancomycin and acid Fusidic. Also, *S. saprophyticus* isolates were highly resistant to Fusidic acid (60%), and were lowest resistant to Linezolid, cotrimoxazole and vancomycin. However, 66,66 % of the *S. heomolyticus* isolates were resistant to kanamycin and Fusidic acid, and there was 66.66 % of resistance for Tobramycin. The established resistance accompanied with high-rate percentage methicillin resistance requires careful consideration to antimicrobial therapy and continued antimicrobial resistance surveillance of staphylococcal UTI.

**Key words:** Prevalence, Antibiotics resistance, Staphylococci, Urinary Tract Infection, Casablanca, Morocco.

## Total phenol content determination and urease inhibitory activity antioxidant activities assessment of Algerian *Tamarix Africana* extract

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### Abstract:

Urease catalyze the hydrolysis of urea to carbonic acid and ammonia via the formation of carbamic acid, the consequences of urease-driven urea hydrolysis and the accompanying pH increase caused by NH<sub>3</sub> production are widespread and, therefore, are relevant in several aspects. The human pathogenic bacterium *Helicobacter pylori* (*H. pylori*), which colonizes the stomach and is linked to diseases such as gastric ulcers, gastritis and stomach cancer. Nowadays, all attentions were directed to the use of medicinal plants, in order to find and discover new molecules from natural sources, and use them instead of the synthetic drugs. The objective of this study is the extraction of secondary metabolites from *Tamarix Africana* leaves, using a centrifuge method, and to evaluate *in vitro* its urease inhibitory ability and antioxidant capacities. The powdered leaves were sonicated in acetone solvent (70%), after that the extract was centrifuged for 10 min. the supernatant was recuperated and evaporated using rotatory evaporator. The quantity of total phenolics was measured using the Folin-Ciocalteu reagent and the microplate method. Urease inhibitory ability of the extract was tested using urease enzyme and thiourea as standards. The antioxidant abilities were tested against DPPH and ABTS<sup>•+</sup> radicals using microplate method using BHT and BHA as standards. The result showed that acetone extract of leaves has a total phenolic content of (479.89±1.09 µg GAE/mg.) Moreover, this extract showed that urease inhibitory activity with urease was important with IC<sub>50</sub> (50.01 ± 0.10 µg/ml), compared with standard used with IC<sub>50</sub> (11.57±0.68µg/ml). Furthermore, acetone extract disclosed a potential activity against DPPH with IC<sub>50</sub> (4.96±0.62 µg/ml) and ABTS with IC<sub>50</sub> (2.92 ±0.27 µg/ml) using BHA (6.14 ± 0.41 µg/ml) (1.81 ± 0.10 µg/ml) and BHT (12.99 ± 0.41 µg/ml) (1.29 ± 0.30 µg/ml) as standards against DPPH and ABTS<sup>•+</sup> respectively. To conclude, Plant extracts are being used to meet needs and overcome the challenges of finding and developing more reliable therapeutic substances with Minimal adverse effect. Acetone extract obtained from leaves proves their abilities to inhibit urease enzyme, implying that can be useful hit compounds with advanced therapeutic growth potential.

**Key words:** Antioxidant activity, Phenolic content, *Tamarix Africana*, Urease inhibitory ability

## The Effectiveness of Physical Therapy in the Hip Joint Vertebrogenic Arthralgia

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### Abstract:

Physical therapy of the hip arthralgia is carried out according to programs for correction of osteoarthrosis of the lower extremities, which is more effective for the correction of arthralgia of the knee joint. Separate studies of physical therapy in the osteoarthritis of the hip show positive results, but they do not take into account the physiological communication of the spine and thighs, which often leads to the imposition of symptoms of dysfunction and complications in diagnosis and further treatment. The purpose of the study was to identify the efficiency of means and methods of physical therapy in the treatment of arthralgia of the hip caused by vertebrogenic disorders. Hypothesis of research: pain in the hip joint area can be caused by dysfunction of sacrum-iliac articulation. For effective intervention during physical therapy in individuals with an arthralgia of the hip joint in the rehab program, it is necessary to include exercises for strengthening Multifidus Muscle and Musculus Transversus Abdominis. The results of treatment of 20 female patients aged 51 to 74 years old with the hip area pain was analyzed. For the initial assessment of the state and testing the effectiveness of therapeutic intervention, the WOMAC test; Functional test TIMED-UP AND GO (TUG), speed checking in normal pace and maximum speed, balance testing with the berg scale. The peculiarity of the proposed physical therapy program along with exercises aimed at strengthening around the structural muscles, hip joints flexibility and mobility, were exercises for strengthening Multifidus Muscle and Musculus Transversus Abdominis, working together and responsible for stabilizing the pelvis. As a result, after 12 weeks of research, we observed a significant decrease in pain indicators (by 26%), skull (by 38%) and self-assessment of functional capacity (by 38%) ( $P \leq 0.05$ ) on the Womac scale. The improvement of the functional capabilities of patients with hip joint arthralgia was noted, namely: a reliable increase in maximum speed (by an average of 25%), a decrease in the time of passing and goes on average by 8.4% ( $p < 0.05$ ) and an increase in the ball when tested on the balance on the Berg scale by 14.6%.

**Key words:** physical therapy, arthralgia, a hip joint.

## The Impact of Mistletoe Water Extracts on Amylase Activity

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### Abstract:

Certain parts of plants have been used for centuries in the prevention and treatment of human health due to the presence of various bioactive components in their composition. One such plant is European mistletoe (*Viscum album* L.). Mistletoe is a parasitic plant that grows on the body of the host trees during all year periods. Mistletoe extracts are complex multicomponent mixtures, which contain various biologically active substances such as glycoproteins, polypeptides, peptides, amino acids, oligo/polysaccharides and many others. Also, aqueous extracts from mistletoe contain the cytotoxic mistletoe lectins, so they are widely used in complementary cancer treatment as immunomodulating agents. In this work the impact of water extracts of European mistletoe leaves on amylase activity was investigated. The plant water extracts were prepared in ASE 350 system Dionex Corporation (Sunnyvale, CA, USA). One gram of herbal samples was mixed with 250 mg diatomic earth in 22 mL cells equipped with a stainless-steel frit and a cellulose filter at the bottom to avoid collection of suspended particles in the collection vial. Extracts were prepared under the pressure of 1500 psi and temperature of 40°C, 70°C and 120°C, and then heated for 6 min, applying one extraction cycle of 5 min. The cells were rinsed with fresh extraction solvent (30% of the extraction cell volume) and purged with N<sub>2</sub> gas for 30 s and extracts were collected into 50 mL tubes. The results show that extracts had influence on amylase activity which was in range 62-105% depending on the extract. It was noticed that extracts obtained at higher temperature influence higher amylase activity. The temperature of preparation of mistletoe extracts has a significant effect on their chemical composition thus on their biochemical properties and capability to influence amylase activity.

**Keywords:** Mistletoe (*Viscum album* L.), accelerate solvent extraction, biological potential, amylase activity.

**Acknowledgements:** This work was supported by the Ministry of Education, Science and Technological Development of Republic of Serbia (Project 451-03-68/2022-14/200134) as well as by Leadership Development Center Filip Moris within the project "Run for the Science".

## The Relationship Between Bariatric Surgery and Eating Disorders

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### Abstract:

Bariatric surgery is a frequently preferred method of treating obesity today. Although bariatric surgery is considered a method with a high success rate, many parameters affect the success of treatment. The psychiatric and psychosocial status of the patient before and after surgery is also one of them. Candidates for bariatric surgery may have eating disorders or impaired eating behaviors that will change the course of treatment. At this point, it is necessary to follow a different path than usual by using specially created guidelines for this group of patients in treatment. This study, it is aimed to determine the effect of eating disorders on the success of bariatric surgery and the change of eating disorder pathology in this process. During the study, the effects of bariatric surgery on the treatment process and the treatment process of eating disorders were examined in detail. It has been revealed by various guidelines and studies examined those surgical candidates should be evaluated primarily for compliance with surgery and the treatment process should be planned according to this assessment. However, it has been seen that behavioral and lifestyle changes should be targeted by starting before surgery. Otherwise, it is understood that the advantages provided by the surgery will not be sufficient in the following process. The entire process before and after surgery, which includes psychosocial support and nutrition education, should be controlled by a multidisciplinary team.

**Keywords:** Bariatric surgery, eating disorders, obesity, multidisciplinary approach, health.

## Atlantoaxial Luxation in A Dog: A Case Report

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### Abstract:

Atlantoaxial (AA) luxation which is also called as AA instability is an orthopedic disorder of cervical spine including the abnormal movements of the joint formed by atlas and axis bones due to several traumatic or genetic causes. The aim of this poster presentation is to demonstrate a case of a dog suffering from AA luxation and to explain the surgical treatment applied to the patient and its outcome. The patient which is the subject of the case is six months old, twenty kilograms weighed stray dog, brought to the veterinary clinic with a lack of consciousness. According to the anamnesis, a car accident was supposed. In the physical examination, the patient was depressive, unresponsive to the stimulations, having hypersalivation and lack of pupilar reflex. The results of complete blood count test were non-specific. In the neurological examination, findings included tetra-paresis, depressed spinal reflexes, normal flexor and cranial reflexes. Pain was detected during the palpation of the neck region and so a radiography was requested for a possible fracture or luxation in the area. In the latero-lateral radiograph of the cervical spine region, due to increased angle between the atlas and axis bones, the diagnosis was made as AA luxation. After the diagnosis, surgery was planned and till the operation, the patient's neck was stabilized with a splint. During the surgical intervention, after giving its correct anatomical position to the neck, the permanent stabilization of the AA joint of the patient and so the arthrodesis of it was provided by the bone cement and five trans-articular screws applied to the region which was approached from ventral side. This way, pressure on the spinal cord was eliminated. After surgery, the patient had cage rest for twenty days. Within that time, the neurologic symptoms were decreased progressively. Patient was walking properly, making flexion and extension movements of the neck without any sign of pain. No abnormalities noted in the routine examination of the patient after two months of surgery.

**Keywords:** atlantoaxial luxation, orthopedy, neurology, dog

## Is Oleuropein The Secret of Long Life?

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### Abstract:

Mediterranean diet is always known to be associated with a favorable health outcome and a better quality of life. Olive oil is the principal source of fats in the Mediterranean diet, and it has been supposed that the components in olive oil can contribute to reducing coronary heart disease and many cancers. The protective and therapeutic effects of phenolic compounds in olive oil on health have been known for a long time, and the major ones are oleuropein, hydroxytyrosol, and tyrosol. Oleuropein, which is found in high amounts in olive and olive leaves as well as in olive oil, is a component with high pharmacological effect, which has protective effects on health and therapeutic effects in many diseases with its efficiency. In particular, oleuropein seems to be an activator of protein digestion and an inhibitor of triacylglycerol absorption. While oleuropein increases the enzymatic activity of pepsin by acting on digestive enzymes, it decreases the enzymatic activity of lipase. By slowing down triacylglycerol metabolism, it takes place as a regulator in digestive metabolism. Various studies have shown that oleuropein acts as antifungal, antibacterial, anti-inflammatory, antioxidant, antiangiogenic, anticancer, antiapoptotic, neuroprotective agents. Oleuropein is also effective on diabetes and its complications. Activation of hepatic AMP-activated protein kinase improves glucose tolerance and insulin resistance. Oleuropein shows its antioxidant effect by increasing the reduced glutathione level and decreasing the concentration of malondialdehyde, nitrite, and nitrate. In addition, studies have shown that oleuropein has a significant anti-apoptotic effect on neurons. In addition, it plays an important role in the prevention of DNA damage, thus impairing mutagenesis and carcinogenesis. It is shown that the oleuropein inhibits NO production, iNOS expression, NF- $\kappa$ B, MAPK pathways, mRNA expression, and the release of some inflammatory mediators like IL-1 $\beta$ , IL-6, TNF- $\alpha$ , and COX-2. Oleuropein exerts its protective effect against cancer through these pathways. Studies have supported traditional beliefs about the beneficial effect of oleuropein. Considering the positive effects of oleuropein on health, enriching olive oil with oleuropein may help increase the positive effects of olive oil on human health.

\*Ece ÇELİK ATALAY states that she is a 100/2000 YÖK PhD Scholar.

**Keywords:** Oleuropein, phenolic compound, Mediterranean diet, antioxidant, anticancer

## An Overview of Hofbauer Cells and Their Functions

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### **Abstract:**

The human placenta is a specialized organ for the transport of substances necessary for fetal development and growth to the fetus, and for the transport of waste materials from the fetus to the mother. The main functional unit of the placenta is the chorionic villi that branch in the pool of maternal blood at the intervillous space. At term, residual trophoblasts are found in the outer layer of the villi. Fetal vascular structures and stromal cells are located in villous stroma, and also, Hofbauer cells. aka fetal/placental/villous macrophages, are located adjacent to trophoblasts and fetal vessels and are in close association with neighboring cells. Many studies drew attention to the role of Hofbauer cells in intercellular communication, inflammatory process, phagocytosis, regulation of the content of the stromal fluid. There is a shred of increasing evidence confirming the crucial role of Hofbauer cells in normal and abnormal pregnancies. In this review, the histological features of Hofbauer cells and their role in the physiopathological processes are discussed. Studies that clarify heterogeneous nature of Hofbauer cells are needed to understand the biology of them and their roles in health and disease.

**Keywords:** Placenta, Chorionic villi, Macrophages, Hofbauer cells.

## **Microbial bioremediation: Effective strategy for removal of pollutants from contaminated industrial water of textile mills plants: An overview**

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### **Abstract**

The industrial water contaminated by heavy metals and other pollutants are common throughout the world. Many strategies are developed to encourage the degradation of pollutants from such affected sites. Bioremediation as one feasible way to be used. It is a technology that employs living microorganisms such as bacteria and fungi to remove harmful contaminants from the polluted environment. The basis of bioremediation is that microorganisms remove substances from the environment to carry out their growth and metabolism. The microorganisms used in this strategy can be both indigenous or non-indigenous. These microorganisms take part in the degradation, immobilization, and detoxification of various harmful chemical wastes and contaminants. Microorganisms which perform the function of bioremediation is known as bio-remediators or bio-reformers. The treatment of contaminated water by the conventional method is found to be unfeasible due to its high cost and generates secondary pollutants. Therefore, bioremediation is not effective only for the degradation of pollutants but it can also be used to clean unwanted substances in industrial water and raw materials from industrial waste through the biological activities of microorganisms. Microbial growth depends on several environmental factors such as pH, temperature, and nutrients. The practice bio-stimulation that involves the addition of nutrients to the contamination site enhances the growth of microbes that assist in bioremediation. One of the main nutrients is molasses, in Iraq we used a natural material (dates extracts) in bioremediation of industrial water of textile mills plants.

**Keywords:** Bioremediation, bioreactors, industrial water, organic pollutants.

**Biotechnology of the dominant species of phytoplankton in reservoirs, the separation of algologically pure cells and their distribution (in laboratory, semi-industrial and industrial conditions).**

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**Abstract:**

Particular attention is paid to monitoring the state of anthropogenic water bodies of the world, identifying factors affecting the state of aquatic organisms and introducing effective development of promising species. In this regard, changes in the hydrological and hydrochemical parameters of inland water bodies have been identified, various aquatic organisms, including algae, have been created for the development of fisheries. Today, however, it is customary to grow microscopic liquids; is not separately regulated or controlled at the national and local levels. According to a 2020 FAO study, only one of the world's 20 most popular countries in the fishing industry reported microwater production, but it was not included in national water management data. In 2018, FAO registered 87,000 tons of microscopic fluid from 11 countries, compared to 86,6000 tons from China. *Spirulina spp.*, *Chlorella spp.*, *Haematococcus pluvialis* and *Nannochloropsis spp.* It is one of the main sources of food and fuel in many countries, from swimming pools to large industrial plants. FAO data is only available for Australia, the Czech Republic, France, Iceland, India, Israel, Italy, Japan, Malaysia, Myanmar and the United States. The relevance of the article lies in the fact that Uzbekistan, along with other countries, must keep a full annual record of the biomass and species composition of phytoplankton and zooplankton. In this regard, it is important to ensure the stability of water bodies, preserve the biodiversity of aquatic organisms and increase fish productivity using modern methods. Therefore, it is important to determine the hydrochemical state of natural and artificial water bodies and develop effective biotechnological methods for their use. It is important to maintain the natural state of natural waters, using small water bodies as a phytoplankton and zooplankton gene pool. Studies show that the use of hydrobionts is important for reducing water pollution and natural purification from organo-minerals.

**Keywords:** biotechnology, microscopic algae, organic matter, water-soluble oxygen.

Poster presentation

## Equisetin promotes autophagy to clear cytosolic *Staphylococcus aureus*<sup>#</sup>

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**Abstract:** *Staphylococcus aureus* can invade and persist in host cells to circumvent extracellular bactericidal treatments, resulting in recurrent infections in clinic. Most conventional antibiotics are ineffective in killing intracellular bacteria due to the limited penetration and accumulation of drugs in the subcellular compartments. Notably, the strategy of host-acting agents that promote host autophagy required for the elimination of intracellular pathogen represent a promising alternative for the treatment of intracellular bacteria. Here we find a marine antibiotic, equisetin, exhibiting potent efficiency against cytosolic *S. aureus* by potentiating host autophagic responses. First, we evaluated the expression of autophagy-related proteins LC3 and p62 by Western blotting and measured the LC3 puncta using immunofluorescence staining in IEC-6 cells infected with *S. aureus*. The results show that equisetin initiates host autophagy via potentiating the expression of LC3-II while decreasing the expression of p62. Importantly, we used bafilomycin as a autophagy inhibitor to testify that equisetin triggers the autophagy progression instead of blocking the autophagic degradation. Furthermore, we analyzed the proliferation of *S. aureus* in IEC-6 cells using the plate counting method. We find that the inhibition of autophagy abolishes the bactericidal effect of equisetin in *S. aureus*-infected IEC-6 cells, suggesting that the activation of autophagy is related to the restriction of intracellular *S. aureus*. In addition, equisetin facilitates the accumulation of cellular reactive oxygen species in IEC-6 cells to combat cytosolic *S. aureus*. Last, we proved that equisetin is active against cytosolic *S. aureus* in a mouse peritoneal infection model. Collectively, these results show that equisetin promotes autophagy to inhibit the proliferation of cytosolic *S. aureus*, shedding light on the development of alternative host-acting therapies to combat intracellular bacteria associated infections.

**Keywords:** cytosolic bacteria, equisetin, host-acting compound, *S. aureus*

<sup>#</sup> This work was supported by the National Natural Science Foundation of China (31922083).

## Fraxetin inhibits multidrug-resistant bacteria through chelating iron

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**Abstract:** The increasing emergence of multidrug-resistant (MDR) pathogens poses a serious public health challenge and desires for new antibiotics. Coumarins, a family of polyphenolic derivatives from diverse plants, are the preferred alternative antibacterial compounds due to their intrinsic advantages in accessibility, low toxicity and high safety. However, the modes of action of such compounds need to be further elucidated. Here we showed that the antibacterial effect of aglycone was superior to glycoside, and fraxetin had the best antibacterial activity among 18 coumarin monomers. Subsequently, we demonstrated that the limited iron level inhibited the growth of MDR pathogens. Compared to the iron chelator (dipyridyl, DIP), fraxetin inhibited the growth of various MDR pathogens in a dose dependent manner. Furthermore, we confirmed the chelation between fraxetin and iron based on the isothermal titration calorimetry (ITC) analysis. Correspondingly, the addition of excess iron into the broth diminished the antibacterial activity of fraxetin. Taken together, our work elucidates that the iron-chelating ability of fraxetin plays a crucial role in inhibiting MDR bacterial pathogens, providing a new insight in the treatment of MDR infections.

**Keywords:** multidrug-resistant (MDR) pathogen, coumarin, fraxetin

# This work was supported by the National Natural Science Foundation of China (31922083).

## Investigation of Protective Effects of Scutellarin in Experimental Colitis Induced Rats

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### Abstract

Ulcerative colitis is an inflammatory bowel disease which is unknown causes, effective treatment options haven't been discovered. Scutellarin is a flavon with established antiapoptotic, antioxidant and antiinflammatory effects. The propose of this study was to investigate the possible protective effects of Scutellarin on rat colitis model induced by acetic acid. A total of 30 male Sprague Dawley rats were randomly divided into five equal groups. Groups; Control, Scutellarin, Colitis, Colitis+Scutellarin, Colitis+Sulfasalazine. Colonic mucosal inflammation was evaluated microscopically. Malondialdehyde (MDA), superoxide dismutase (SOD) activity, total antioxidant status (TAS), nitric oxide (NO), interleukin 6 (IL-6), tumor necrosis factor- $\alpha$  (TNF-  $\alpha$ ), DNA fragmentation levels were measured. In addition colon tissue sections were evaluated immunohistochemically (Bcl-2, Bax), TUNEL staining and histopathologically. Pretreatment with scutellarin significantly reduced histological damage. Besides scutellarin significantly reduced the serum and tissue levels of MDA, serum NO, IL-6, TNF-  $\alpha$  and increased the enzymatic activity of SOD and TAS levels in colon tissue and serum. Scutellarin suppressed apoptosis by down regulation of Bax, reducing DNA fragmentation and inducing expression of Bcl-2. Rates of apoptosis increased with the levels of oxidant, the histopathological evaluation also confirmed this findings, activities of antioxidant enzymes decreased significantly in colitis group. Administration of scutellarin ameliorated the pathological and biochemical alterations in rats caused by colitis. In the light of the data obtained in this study indicated that scutellarin might be protective effect by down regulation of pro inflammatory cytokines, suppressed apoptosis and oxidative stress in ulcerative colitis.

**Keywords:** Apoptosis, colitis, DNA fragmentation, oxidative stress, Scutellarin

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## The Investigation of Protective Effects of *Harpagophytum Procumbens* Extract in Experimental Rat Colitis Model

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### Abstract:

Ulcerative colitis is a chronic inflammatory bowel disease of unknown etiology characterized by neutrophil infiltration in the colon, epithelial cell necrosis and ulceration. *Harpagophytum procumbens* (HP) roots have been used as an alternative medicine plant for many years in the treatment of rheumatism and pain in South Africa. The aim of this study was to investigate the possible protective effects of *Harpagophytum procumbens* (HP) extract in experimental rat colitis model. Totally 40 male Wistar albino rats were randomly divided into five equal groups. Groups: Control group (Physiological saline (FTS) was administered by 2 ml orally for 14 days and at the end of the 14th day 2 ml FTS was administered intrarectally), Colitis group (FTS was administered by 2 ml orally for 14 days and at the end of the 14th day 2 ml of 3% acetic acid was infused intrarectally), Colitis+Sulfasalazine group (100 mg/kg sulfasalazine was administered orally for 14 days and at the end of the 14th day 2 ml of 3% acetic acid was infused intrarectally), HP group (HP was administered 300 mg/kg 2 ml in FTS orally for 14 days) and Colitis+HP group (HP was administered 300 mg/kg 2 ml in FTS orally for 14 days and at the end of the 14th day 2 ml of 3% acetic acid was infused intrarectally). After 24 hours the last application of each group, 4-5 ml blood samples were taken from the heart into serum tubes under isoflurane anesthesia and the serum was separated. 5 cm distal colon was taken and thrown into 10% formol to prepare paraffin blocks. Colon tissue sections were evaluated by histopathologically. MDA, SOD, TAS, NO, TNF- $\alpha$ , IL-6, ceruloplasmin and sialic acid were analyzed in serum. Pretreatment with HP significantly decreased histopathological damage, serum levels of MDA, NO, TNF- $\alpha$ , IL-6 and increased the levels of TAS and SOD in colitis+HP group compare to colitis group. In the light of the data obtained in this study demonstrated that *Harpagophytum procumbens* might be protective effects on oxidative stress and inflammatory process in rats with an experimental colitis model.

**Keywords:** Antioxidant, apoptosis, *Harpagophytum procumbens*, colitis, rat

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## The Cardiovascular Protective Effects of Chrysin

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### Abstract:

Chrysin has been concentrated on its therapeutic properties in recent years. Chrysin (5,7-dihydroxyflavone or 5,7-dihydroxy-2-phenyl-4Hchromen-4-one) belongs to the flavone class of the ubiquitous 15-carbon skeleton natural polyphenolic compounds which called flavonoids. It is found in various fruits, vegetables, and many plant extracts especially in honey, blue passion flower (*Passiflora caerulea*), and propolis. The chemical properties (due to lack of oxygenation) of chrysin are associated with a number of pharmacological activities that range from antioxidant to anticancer effect. The allowable doses of chrysin for human consumption are 0.5 to 3 g every day. Although chrysin has low bioactivity, the amount of absorbed chrysin may be enough for protecting the cardiovascular diseases. Chrysin has been shown to be a very active flavonoid including many pharmacological properties such as antihypercholesterolemic activity, cardioprotective activity by improving post-ischemic functional recovery, suppressive effect on Vascular Endothelial Growth Factor (VEGF)-induced angiogenesis, antiinflammatory activity by blocking histamine release and proinflammatory cytokine expression. There is also numerous scientific literature that the cardioprotective effects of chrysin strongly confirmed direct or indirect by experimental studies. Chrysin has antioxidant, anti-inflammatory, anti-atherogenic, anti-hypertensive and anti-diabetic effects. The antioxidant effect of chrysin is mostly due to its redox activities, donating an electron/hydrogen atom, quenching singlet oxygen molecule and its metal chelating potential. In addition, it reduced the hepatic levels of lipid peroxidation (malondialdehyde-MDA) and also elevated the levels of enzymatic (CAT, SOD, and GPx) and non-enzymatic (GSH) antioxidants in atherosclerosis. Chrysin has an anti-hypertensive effect by inhibiting the membrane damage and decreasing the levels of lipid peroxidation and increasing the antioxidant content in endothelial cells. Also, it shows hipolipidemic effect by shifting towards LDL-c production following PPAR- $\gamma$  activation. In addition, prevented platelet aggregation and granule release induced by collagen, and also platelet aggregation induced by ADP, U46619, and thrombin on collaged-activated platelets. chrysin decreased serum levels of Creatine Kinase (CK), the expression of Bax and caspase-3 and also increased Bcl-2 and desmin expressions in the cardiomyocyte.

**Keywords:** Chrysin, antioxidant, cardiovascular, inflammation, oxidative stress.

## Assessment of physicochemical water quality of Bekhadda Dam-Tiaret, Algeria

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### Abstract:

Surface water has been used in recent years for different purposes such as irrigation, drinking and industry. Due to increasing world population and pollution, fresh water has become a global problem. In Algeria; considerable investments have been devoted to the construction of dams. However, the quality of these waters has declined in the face of increased human activities. In addition, the use of excessive amounts of fertilizers and pesticides on Agricultural land has great impacts on surface water resource. The present work aimed at assessing water physicochemical quality of Bekhadda Dam; one of the most important Dams in Tiaret region (West of Algeria). Water samples were collected from different locations within the dam's reservoir. Several physicochemical parameters (pH, temperature, electrical conductivity (EC), dissolved oxygen (DO), dry residuals, oxidizable matter (OM), nitrate (NO<sub>3</sub><sup>-</sup>), ammoniacal nitrogen (NH<sub>4</sub><sup>+</sup>), chloride (Cl<sup>-</sup>), phosphates (PO<sub>4</sub><sup>3-</sup>), biological oxygen demand (BOD<sub>5</sub>) and chemical oxygen demand (COD)) were measured. The result of this research showed that the values of studied parameters, except phosphates and ammoniacal nitrogen concentrations were within the permissible limit of standards established by the National Agency for Hydraulic Resources (ANRH) and Algerian standards for surface water. These findings constitute a basis for monitoring the physicochemical quality of water in the study area.

**Keywords:** Physico-chemical parameters, Bekhadda Dam, Tiaret, Water quality.

## Identification Of The CYP1A2 \* 1F Allelic Variant And Corresponding Genotypes, In A Group Of Patients With Cardiovascular Disease, In The Albanian Population.

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### **Abstract:**

The CYP1A2 enzymes (Cytochrome P450, Family 1, Subfamily A, Member 2) are monooxygenases, with a very important role in drug metabolism. Depending on the individual genotype, we have homozygous individuals for the CYP1A2 \* 1A variant that are considered 'fast' metabolites and homozygous individuals for the CYP1A2 \* 1F variant that are considered 'slow' metabolites. By comparing the frequencies of variant \* 1F and the corresponding genotypes found in the group of individuals with CVD, with those obtained in the healthy Albanian population, we can assess whether variant \* 1F is related to myocardial infarction in the Albanian population. Through this study our objective consists in determination of genotypic and allelic frequencies of CYP1A2 gene variants, through their genotyping by DNA analysis, PCR-RFLP in the group of patients with CVD, also as in comparison of genotypic and allelic frequencies between the healthy Albanian population and the group of individuals with CVD. For the realization of this study, 50 individuals who had suffered a single myocardial infarction and aged ranging from 50-75 years were taken into analysis. The genotyping of the subjects was performed through PCR-RFLP technique. The frequencies of CYP1A2 \* 1A / \* 1A, CYP1A2 \* 1A / \* 1F and CYP1A2 \* 1F / \* 1F genotypes are respectively 50%, 42% and 8%. The frequency of the normal CYP1A2\* 1A allele is 71%, while the frequency of the CYP1A2 \* 1F mutant allele is 29%. Compared to the healthy population we note that the frequency of the allele \* 1F ( $p > 0.05$ ) and the frequency of the homozygous FF genotype are significantly higher ( $p > 0.05$ ) in the group of patients with CVD. These changes indicate that the FF genotype is prone to a higher risk for myocardial infarction.

**Keywords:** drug metabolism, genetic polymorphism, CYP1A2 \* 1F allele, cardiovascular disease (CVD), Albanian population.

## Antibiotic Susceptibility And Epidemiology Of Methicillin-Resistant *Staphylococcus aureus* In Nosocomial And Community Acquired Infections

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### Abstract:

Bacterial nosocomial and community acquired infections due to the emergence of drug-resistant pathogens cause high morbidity and mortality worldwide in humans. Staphylococci are number one among the Gram-positive bacteria responsible for multiple infections in hospitals. Methicillin-resistant *Staphylococcus* bacteria are among the main agents responsible for increasing healthcare-associated infections in Algeria. The aim of this survey is to determine the epidemiological characteristics and antibiotic susceptibility profile of methicillin-resistant *Staphylococcus aureus* causing nosocomial and community acquired infections isolated from outpatients and hospitalized patients in the PHI (public hospital institution) in southeastern Algeria. A prospective study was carried out in the microbiology laboratory of the PHI (public hospital institution) in southeastern Algeria, for period of 12 months (October 2020 – October 2021). The disk diffusion method was used for antimicrobial susceptibility testing according to Clinical & Laboratory Standards Institute methodologies (CLSI) from different families of antibiotics (beta-lactamin, céphalosporin, aminoside ,glycopeptids ,cyclin ,ansamycin ,fluoroquinolons, macrolids, sulfonamids, in order to target multi-resistant strains. The search for Methicillin resistance was verified for each strains by using a disc of oxacillin (5µg) or cefoxitin (30µg), according to the recommendations of CLSI. A total of 125 isolates of *staphylococcus aureus* were obtained in a period study. Among this 125 clinical isolates 80 (64%) were identified as methicillin resistant *S.aureus* (MRSA) by disc diffusion method. While 60(36%) represented methicillin-sensitive *Staphylococcus aureus* (MSSA). The majority of strains were collected from blood streams (54%) followed by pus (27,5%) , with a percentage 77.5% of cases recorded in adults. Of the patients, 68% were male and 60% come from intensive care unit. All isolated strains of staphylococci showed resistance levels greater than 75% to betalactamins and cyclins. Two cases of resistance were reported for glycopeptides. However, there is a decreased resistance to sulfonamides (with 18%) and to macrolides (25% for erythromycin), Aminoglycosides remains active (gentamicin 5%, amikacin 0%); other resistance rates were 60% for ofloxacin, 40% for clindamycin and rifampicin. Bacterial nosocomial and community acquired infections with MRSA is considered to be serious conditions, responsible for significant morbidity and mortality worldwide. So, strict regulations would allow the early detection of MRSA colonization, and knowledge of the antibiotic resistance profile would be beneficial in preventing hospital-acquired infections.

**Keywords:** MSSA, Methicillin-resistant *Staphylococcus*, antibiotics, bacterial nosocomial infections , Gram-positive bacteria.

## Impaired Overnight Motor Memory Consolidation in Schizophrenia: A Meta-analysis

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### Abstract:

Schizophrenia is a debilitating psychiatric disorder that usually emerges in late adolescence and early adulthood and is characterized by sleep disturbances and cognitive impairments. Both sleep and cognitive impairments are persistent symptoms of schizophrenia. Recent studies show that motor memory consolidation is impaired in patients with schizophrenia compared to healthy controls. The current meta-analysis was conducted in accordance with PRISMA guidelines and with the metaphor package in RStudio environment. A random effects model and the inverse variance method are used to weigh effect sizes (Hedge's  $g$ ) and to calculate corresponding 95% confidence intervals. Separate meta-analyses were conducted for healthy subjects and people with schizophrenia for the studies using finger tapping motor sequence task. For the studies using finger tapping motor sequence task, the random-effects model analyses for overnight motor memory consolidation resulted in a large effect size in healthy controls ( $g = 1.07$ ) and a negligible effect size in people with schizophrenia ( $g = 0.19$ ). Current results show that sleep improves motor memory consolidation in healthy adults, but there is an impairment in people with schizophrenia. Future studies in larger samples of schizophrenia that investigate different memory subtypes and use polysomnography are needed.

**Keywords:** sleep, motor memory, schizophrenia, memory consolidation

## The Different Uses of Cumin (*Cuminum cyminum*), Gladich (*Laser trilobum*) and Caraway (*Carum carvi*) Plants

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### Abstract:

Herbs and spices have been used in traditional medicine for prevention and treatment of the diseases by means of their secondary metabolites, since ancient times. In the past, spices were initially used in religious rites and rituals, in addition their therapeutic affects. Recently, the use of by products of medicinal plants such as essential oils, liquid flavors, extracts, oleoresins is increasing. Cumin (*Cuminum cyminum*), which is among the plants that have an important potential in our foreign trade, and Caraway (*Carum carvi*) and Gladich (*Laser trilobum*) species are gaining interest due to their narrowing productions. Cumin (*Cuminum cyminum* L.) is an annual herbaceous plant belonging to the "Apiaceae" family and is mostly grown in the Central Anatolian Climatic Conditions. Caraway (*Carum carvi*) (Umbelliferae) is a biennial or perennial herbaceous plant and is widely grown in Europe. Gladich (*Laser trilobum*) is a perennial herbaceous plant with an upright growing tendency belonging to Umbeliferae family. It grows on rocky slopes, on the edges of forested areas and vineyards, but it is not cultivated in Türkiye.

There are demand to the tolerant and resistant varieties that will take place in rotation systems in cumin (*Cuminum cyminum*) cultivation. Starting to cultivation studies of *Carum carvi* and *Laser trilobum* are essential in terms of increasing the diversity of product pattern with the species found in the natural flora, and also contributing to the protection of our genetic resources.

Keybord: *Cuminum cyminum*, cumin, caraway, *Carum carvi*, gladich, *Laser trilobum*, uses

## Skin care properties of *Kalanchoe pinnata*

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### **Abstract:**

*Kalanchoe pinnata* is a plant with various pharmacological activities such as immunosuppressive, wound healing, anti-inflammatory, anti-diabetic, antioxidant activity and more. It was shown, that plant extracts of *Kalanchoe pinnata* containing various types of bioactive compound have cosmetic benefits uses. The aim of the study was to determine skin care properties of *Kalanchoe pinnata* ointment. Oil macerates and ointments of *Kalanchoe pinnata* were tested in order to determine the antibacterial and antifungal activity. *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Candida albicans* were tested. Baird – Parker Agar, MacConkey Agar, Cefrimide Agar and Sabouraud Chloramphenicol Agar were used. One ml of fresh bacterial or fungi culture was pipetted in the center of sterile Petri dishes. 100 µl of oil macerates and ointments were added into sterile paper discs placed on the dishes mentioned above. The plates were incubated at 37°C for 18 h – 48 h. Antimicrobial and antifungal activity was detected by measuring the zone of inhibition after incubation period. The degree of skin hydration after using ointment from *Kalanchoe pinnata* and also transepidermal water loss were determined with the help of a Corneometer® CM 825 and by the Tewameter®™ 300. Preliminary results revealed that the oil extract and ointment of *Kalanchoe pinnata* are suppressing the growth of *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Candida albicans*. Moreover, Corneometer® indicates the increase hydration level of the *stratum corneum* and reduction of transepidermal water loss after application a probe of *Kalanchoe pinnata* ointment to the skin surface. The results indicate the possibility of using ointment of *Kalanchoe pinnata* as the care of skin product.

**Keywords:** *Kalanchoe pinnata*, ointment, Corneometer®, Tewameter®™

### **Analysis of chitinase in *Bacillus salmalaya* strain 139SI and characterization**

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**Abstract:** Chitinases are enzymes that break down the internal 1,4 glycosidic bonds in chitin, a structural component of arthropod exoskeletons and fungal cell walls. *Bacillus salmalaya* 139SI showed high haemolytic activity in this investigation, with a protein concentration of 56.43 mg/mL. Furthermore, strain 139SI displays potent antifungal activity against *Fusarium* sp., *R. solani*, and *Phytophthora* sp., all of which are phytopathogenic fungi. Strain 139SI can degrade the peptidoglycan component of cell walls in gram-negative bacteria like *E. coli*, but not in gram-positive bacteria like *Staphylococcus aureus*. Chitinase activity was discovered when a 200l crude extract of 139SI was able to degrade 0.09 g chitin of shrimp shell by successfully breaking down shrimp shell structure and chitin linkages as early as 2 days or as late as 7 days. As a result of the findings, *B. salmalaya* 139SI has the potential to be a novel biofunctional chitinase that could be used as a biological agent to degrade the chitin component of fungal cell walls and shell waste from a variety of insects and crustaceans to solve future agricultural and fishery industry problems.

**Keywords:** Chitinases, *B. salmalaya*, biofunctional, peptidoglycan.

## Eco-Friendly Cleaning Activity of *Bacillus salmalaya* 139Sl: A Novel Strain for Cleaning Common Household Stains

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### Abstract:

Microorganisms have been commonly used to clean the environment and monumental buildings. But, this application of extracellular enzyme combination for cleaning is ineffectively utilized for household cleaning uses. For domestic cleaning the detergent daily use can cause bad effects to the environment. Hence, this analysis proposed the use of *Bacillus salmalaya*, a Gram positive, facultatively aerobic, bacilli shaped endospore forming bacteria that is capable of producing many enzymes apt for cleaning. This study demonstrated the ability of *B. salmalaya*'s cell free supernatant to clean common household stains. The research was conducted by associating the cleaning ability of supernatant with two changed concentrations to clean against detergent and water. Using spot-density analysis computer program which measures the stains' colour intensity, before and after cleaning images were examined to calculate the cleaning ability of each cleaning agent. Results revealed that for most stains the detergent cleanses the best. Remarkably, the higher concentration supernatant cleaning capability does not deviate much from detergent. In soy sauce, the supernatant cleanses better than detergent by 15%. While the cleaning capability of the supernatant in ketchup and oil is less than detergent by 2% and 16% correspondingly. But, when cleaning turmeric extract, no significant change was detected. Thus, these suggest that *B. salmalaya*'s supernatant needs to be more examined to develop a more effective formula and commercially viable product because it has the potential as an environmental cleaning agent, and therefore be the crucial to lessen the effects on environmental pollution.

**Keywords:** *Bacillus salmalaya*; soy sauce; cleaning activity

## Monitoring of Eurasian Lynx Reproduction with Camera Traps in Croatia

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### Abstract:

Eurasian lynx (*Lynx lynx*) kittens are mostly born in May - June with their number ranging from 1 to 4 per litter. Kittens that survive until independence leave their mother at the age of about 10 months. In the past years camera traps became the most important tool for lynx research, including monitoring of the reproduction. The aim of this study was to analyze the number of lynx kitten observations on camera traps through three reproductive seasons in Croatia. In the period from June 2018 to December 2021 camera traps were active across almost entire lynx distribution area in Croatia, covering about 6000 km<sup>2</sup>. Cuddeback Long Range IR camera traps were placed on lynx marking spots, forest roads and animals' trails on 182 locations. During our study period we observed 91 event of lynx females with 1 (47%), 2 (44%) or 3 kittens (9%). Based on fur spots we identified 38 litters with 65 kittens, averaging 12 litters and 22 kittens per season. Newborn kittens were observed the earliest in July and monitored until April next year. In the period April – June kittens were not recorded on camera traps, and the highest number of events were recorded in November – February period. Litters with three kittens were recorded in August – November period. This research presents the first insight into lynx reproduction in inbred Dinaric lynx population in Croatia. Litters with three or more kittens are probably underrepresented as it is possible that camera traps can not register the entire litter at once. In spite of the small number of 3-kitten litters it is indicative that they are not recorded after November, which might be a consequence of the kitten mortality.

**Keywords:** lynx, kittens, season, reproduction

## Successful Management of Feline Orofacial Pain Syndrome: A Case

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### Abstract:

Feline Orofacial Pain Syndrome (FOPS) is a maladaptive pain syndrome that cause clinical symptoms of tongue mutilation, oral discomfort and pawing at the mouth. Several risk factors have been defined involved in the development of the disease such as oral lesions, environmental stress and hereditary tendency. In most cases affected area is unilateral and symptoms is triggered by eating, drinking and mouth movings. Treatment of the disease consist of several steps such as dental treatment, non-steroidal anti-inflammatory drugs (NSAIDs), antibiotics and adjuvant analgesics. In our case a two years old castrated male domestic shorthair cat presented to Ondokuz Mayıs University, Veterinary Teaching and Research Hospital with the complaint of intermittent orofacial discomfort, pawing at the mouth and increased vocalization. The cat is living in a multi-cat household and seems to socially incompatible with the other cats. Patient diagnosed with gingivitis and prescribed antibiotics several times previous to referral. Dental treatment has been done two months ago in a private clinic previous to referral. Owner claim that mouth movements and grooming could be a trigger for behavioural signs like pawing at the mouth and increased vocalization. A through clinical examination has performed including oral examination. Oral examination revealed that cat has mild gingivitis and halitosis, other physical examination fidings were normal. Complete blood count and serum biochemistry were unremarkable. Video record of the case was compatible with the owners complaint of pawing at the mouth, increased vocalization, and orofacial discomfort. FOPS as a complex disease with behavioral and medical consequences management can be difficult for both owners and veterinary surgeons. Tarantula Cubensis extract, as a reliable homeopathic agent, can reduce the symptoms of the disease when used in addition to FOPS treatment. With this study, it has been suggested that Tarantula Cubensis extract may be effective in maladaptive pain conditions and it is expected to shed light on future studies.

**Keywords:** Behaviour, Feline Orofacial Pain Syndrome, Maladaptive Pain, Tarantula Cubensis Extract

## Feline Hyperesthesia Syndrome in a Cat

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### Abstract:

Feline hyperesthesia syndrome (FHS) is a collection of clinical indications that can spontaneously or be induced by a mild touch on the lumbar area. It is a rare syndrome, often of unknown cause, and the most common associated causes are skin-related disorders such as bacterial, fungal dermatitis, allergies, and immune-mediated diseases. Clinical symptoms are diverse, diagnosis is often complex, and treatment varies according to the underlying cause. In this poster presentation; a one-year-old castrated male Domestic Short Hair cat developed episodes of rapid onset back discomfort, particularly in the lumbar area, as well as increased vocalization. Cat attacks and bites its own back. According to the owner, the clinical signs were observed after the owner's marriage. The patient underwent a routine physical examination, and no abnormal data were encountered. In addition, the data obtained in CBC, serum, and biochemical analyzes were within reference values. Scrapings on the skin and fungal culture were both negative. Based on the cat's examination findings and history, Feline Hyperesthesia Syndrome has been identified. Pheromone therapy (Feliway) and gabapentin 1.5 mg/kg orally twice daily are used to treat the condition. A detailed environmental and behavioral modification was applied in addition to medication and pheromone therapy.

**Keywords:** Behaviour, Feline Hyperesthesia Syndrome, Feliway, Gabapentin, Pheromone Therapy

## Evaluation of antioxidant activities of *Mentha suaveolens* L

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### Abstract

*Mentha suaveolens* L is an aromatic and medicinal plant; the essential oil of this plant is widely used in alternative medicine. The present study is to know the chemical composition of hydroalcoholic extracts of *Mentha suaveolens* L and to determine their antioxidant activity *in vitro*. The present study aimed to estimate and compare, using *in vitro* tests, the antioxidant activities of hydroalcoholic extracts of *Mentha suaveolens* L. The contents of total polyphenols, flavonoids and total antioxidant capacity (TAC) were determined by the Folin-Ciocalteu method, the AlCl<sub>3</sub> method and the phosphomolybdate reduction method, and DPPH free radical, Scavenging of H<sub>2</sub>O<sub>2</sub>, and FRAP, respectively. The outcomes allowed us to spotlight the presence of merchandise with antioxidant and bioactive capacities *in Mentha suaveolens* L. The repones of extract hydroethanolic depends on the type of take a look at. The test gave high value in phenolic compounds and flavonoids. Morocco has crucial genetic heritage of medicinal and fragrant plants several of which are endemic. Essential oils and the numerous extracts of PAM species are broadly used inside the pharmaceutical and cosmetic industries and for the protection of numerous food merchandise.

**Keywords:** *Mentha suaveolens* L; antioxidant activity; *in vitro*; hydroethanolic extracts

## The Impact of Mistletoe Water Extracts on Amylase Activity

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### Abstract:

Certain parts of plants have been used for centuries in the prevention and treatment of human health due to the presence of various bioactive components in their composition. One such plant is European mistletoe (*Viscum album* L.). Mistletoe is a parasitic plant that grows on the body of the host trees during all year periods. Mistletoe extracts are complex multicomponent mixtures, which contain various biologically active substances such as glycoproteins, polypeptides, peptides, amino acids, oligo/polysaccharides and many others. Also, aqueous extracts from mistletoe contain the cytotoxic mistletoe lectins, so they are widely used in complementary cancer treatment as immunomodulating agents. In this work the impact of water extracts of European mistletoe leaves on amylase activity was investigated. The plant water extracts were prepared in ASE 350 system Dionex Corporation (Sunnyvale, CA, USA). One gram of herbal samples was mixed with 250 mg diatomic earth in 22 mL cells equipped with a stainless-steel frit and a cellulose filter at the bottom to avoid collection of suspended particles in the collection vial. Extracts were prepared under the pressure of 1500 psi and temperature of 40°C, 70°C and 120°C, and then heated for 6 min, applying one extraction cycle of 5 min. The cells were rinsed with fresh extraction solvent (30% of the extraction cell volume) and purged with N<sub>2</sub> gas for 30 s and extracts were collected into 50 mL tubes. The results show that extracts had influence on amylase activity which was in range 62-105% depending on the extract. It was noticed that extracts obtained at higher temperature influence higher amylase activity. The temperature of preparation of mistletoe extracts has a significant effect on their chemical composition thus on their biochemical properties and capability to influence amylase activity.

**Keywords:** Mistletoe (*Viscum album* L.), accelerate solvent extraction, biological potential, amylase activity.

**Acknowledgements:** This work was supported by the Ministry of Education, Science and Technological Development of Republic of Serbia (Project 451-03-68/2022-14/200134) as well as by Leadership Development Center Filip Moris within the project "Run for the Science".

## Vitamin C associated with cholesterol-cyclodextrin and vitamin E-cyclodextrin on oxidative status of bull sperm cryopreservation

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### Abstract:

Sperm cryoconservation is advantage technique for cell conservation. However, this technique promote cell cryodamage. In this reason, some biomolecules were supplemented into sperm extender to limit these stresses. This study was conducted to cryopreserve bull sperm using cholesterol-loaded cyclodextrin (CD-CHL), vitamin E-loaded cyclodextrin (CD-VitE) and vitamin C simultaneously or separately. Ejaculates from nine mature bulls was divided in four equal aliquots. Aliquots were diluted with fraction A (Tris+fructose+citric acid) supplemented with VitC; CD-VitE; CD-CHL and CD-VitE+VitC+ CD-CHL, the control aliquot was diluted without further supplementation. After freezing-thawing process, spermatozoa were washed, sonicated, and prepared for quantification of lipid peroxidation via the TBARS test. The results revealed that media containing simultaneously all the molecules studied in this work (CD-CHL+CD-VitE+VitC) showed a highest significant positive effect on the oxidative status ( $0.049\pm 0.08$ ) compared to the control group ( $0.148\pm 0.04$ ) ( $P<0.05$ ).

**Keywords:** cryopreservation, bull sperm, oxidative stress, antioxidant.

## Rickettsia Spp. Infection In A Cat With Hypertrophic Cardiomyopathy

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### Abstract:

In a 1-year-old mix breed cat who came to our clinic with the complaint of decreased appetite for 1 month, anemia and abnormal lung sound were detected as a result of general physical examination. Then, complete blood count, serum biochemistry analysis and radiography were applied to the patient, respectively. Echocardiographic evaluation was performed from the right parasternal view, using B-mode, M mode, Pulse-Wave Doppler, Continuous Wave Doppler and Tissue Doppler, respectively. In the echocardiographic examination, IVSDd (Interventricular Septum Diameter Diastole) and LVPWd (Left Ventricle Posterior Wall Diastole) thicknesses were found to be higher than 6 mm. Pericardial effusion was also found. Hypertrophic cardiomyopathy is the hypertrophy of the myocardium without any other cause. It is seen with a prevalence of 10-15% among cats. This rate is higher in geriatric cats. Although it is one of the most common causes of death among cats, its complications are very severe. Echocardiography is the gold standard in diagnosis. In the blood cytology evaluation, Rickettsia spp. found. Rickettsial diseases are vector-mediated diseases that cause non-specific symptoms. It causes anemia, thrombocytopenia and lymphopenia in the patient. It usually occurs in patients who are not treated with antiparasitic drugs. As a result, hypertrophic cardiomyopathy and Rickettsial diseases are encountered in young cats. Common non-specific symptoms may occur, so the physician should perform a multisystemic examination.

**Keywords:** Cat, Echocardiography, Hypertrophy, Rickettsia.

## A Rare Case: Right Ventricular Thrombus in a Dog

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### Abstract:

In a 9-year-old, intact, female Terrier dog referred to OMU Animal Hospital Internal Medicine Polyclinic from another clinic with the complaint of enlarged heart. General physical examination, Doppler blood pressure measurement, whole blood and serum biochemistry analyzes, thorax radiographic imaging, electrocardiographic and echocardiographic evaluations were performed. Electrocardiographic evaluation of the patient; lead II, made in the range of 10 mm/mV, 25mm/s and echocardiographic evaluation was performed from the right parasternal and left apical windows, using B-mode, M mode, Pulse-Wave Doppler, Continuous Wave Doppler and Tissue Doppler, respectively. On general physical examination, the breast tissue was hyperplastic and had irregular borders. Echocardiography revealed a thrombus with a diameter of 12.2\*9.9 mm in the right ventricle. Intracardiac thrombi are rare cases. Hemodynamics changes in diseases such as nephropathies, systemic hypertension, hypothyroidism, neoplasia and hyperadrenocorticism. It is thought that the cause that changed the hemodynamics in our case was a breast tumor. The patient underwent an extensive diagnostic examination. In terms of intracardiac thrombi, only a few cases have been reported in worldwide. Such that, in these cases, the localization of the thrombus was generally the atria. Our case has taken its place among the rare ones around the world. The aim of this report, which is among the few cases in the world; to draw attention for incidental thrombi in the diagnosis phase and to emphasize the importance of antithrombosis use.

**Keywords:** Clot, Dog, Echocardiography, Thrombus

## Nutritive content of roughages used on farms in the Republic of North Macedonia

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### Abstract:

Feeding is very essential in livestock production and it takes about 75% of the total cost of production. What animals eat is what they produce. Roughages are plant-based feedstuffs which are commonly used in the farms in Republic of North Macedonia. Due to the high fiber content, for selected animal species, these fibrous carbohydrates function to maintain the structure, activity, and microbial population of the gastrointestinal tract which is essential for optimal function of the whole organism. The aim of the study was to determine the quality characteristics, which includes total protein, fat, water, ash and fiber content of different types of mostly used roughages on the farms in our country. The methods used are accredited in accordance with the ISO 17025 standard. The results shown that the lowest total protein concentration of 2.27% was observed in corn silage and the highest in complete meals (TMR), up to 10%. Alfalfa silage contains a significantly higher concentration of protein than that of corn (up to 7%), but does not differ significantly in other parameters. The cellulose content reaches up to 20% in wet foods and up to 35% in dry bulky foods. Alfalfa hay can be observed with a significantly high concentration of protein (up to 20%) as well as cellulose, which makes it a frequently used food in cattle farms in our country.

**Keywords:** quality parameters, feed, roughage, farms

## Epidemiological and Ethnobotanical Study of Medicinal Plants Used in the Prevention of COVID-19 Infection in Tiaret Region (Algeria)

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### Abstract

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a strain of Coronavirus that causes COVID-19 (Coronavirus Disease 19). This disease was emerged in Wuhan (China) since December 2019 and subsequently became a global pandemic mainly transmitted through direct contact with infected people. Our research was divided into two studies; a retrospective study, which is based on data from the prevention service of Youcef Damardji Hospital in Tiaret region (Algeria) and an ethnobotanical study carried out with herbalists on the medicinal plants used against COVID-19. For the determination of various risk factors of contamination by this pandemic on hospitalized cases from March 2020 to March 2021, which include 4109 patients, it appeared that 49% of them were infected and the most affected age group was 50-59 years with a male predominance (51.04%).)The determination of the medicinal plants used by the inhabitants of Tiaret region to prevent COVID-19 allowed us to identify 25 species belonging to 14 botanical families. The most represented family was *Lamiaceae*, the most used species was *Syzgium aromaticum*, and the most used parts were the leaves (oral administration and infusion form).

**Keywords:** COVID-19, Epidemiology, Ethnobotany, Pandemic

## Effects of Covid-19 Pandemic on Individuals with Mental Illness

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### **Abstract:**

Coronary virus disease (Covid-19), the infectious disease caused by the recently discovered type of coronavirus, was spread to the whole world in a short time and was declared as a pandemic by the World Health Organization (WHO). As the disease agent is a new type of coronavirus, due to the lack of sufficient information about the prognosis and treatment processes of the disease, it leads to a negative impact on the biopsychosocial aspects of communities, families, and vulnerable individuals. Children-adolescents, pregnant women, the elderly, those with weak immunity, and those with physical and mental illness, who are particularly vulnerable, are at higher risk due to the biopsychosocial consequences of the pandemic. Many problems caused by the epidemic cause individuals with mental illness who receive both outpatient and inpatient difficulties in accessing treatment. According to the World Health Organization and the Ministry of Health in this process, nurses, doctors, psychologists, and medical technicians are among the leading healthcare professionals who take an active role in meeting the care and treatment needs of patients. The psychiatric nurse should cooperate with all other team members working in the field of mental health in order to screen the risky groups in terms of mental illnesses and to determine their mental states and take necessary interventions during the pandemic period. It is very important to carry out frequent screenings and controls for the prevention of pandemics but to include a psychiatric nurse, who is a mental health worker, in the team that performs these screenings and controls in order to protect the mental health of the community.

**Keywords:** Coronavirus disease 19 (Covid-19); mental illness; psychiatric nursing

## How To Unify Drinking Water Quality Assessment: Problems And Solutions

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### Abstract:

The problem of drinking water quality regulation is an actual question of the scientific community and human society. Generally, different countries all over the world and WHO proposed an agreed list and guidelines for permissible values for various groups of composition and properties of water. But now there is no unified approach to the generalized assessment of drinking water quality, which will be similar to the ecological indices based on Horton's index, for example. It is so difficult to answer the question of an ordinary water consumer to a sanitary health officer: if at least one of the limiting parameters of water quality was over, what level of health risk? It is clear, that all pollutants are subdivided on their toxicity. For example, if the concentration of Calcium and Cadmium exceeds the maximum allowable level twice at the same time, should the risk be equal or twice, or more? Or is a cumulative effect possible, or, conversely, an antagonistic one? The aim of research is to search for answers to these questions is a very complicated and costly process that requires the efforts of all researchers in the world. Method: we tried to approach the solution of the issue of a comprehensive assessment of the quality of drinking water using a statistical approach based on the Harrington desirability function. Its main advantage is that the water quality assessment can be presented as a single result, understood by the consumer on a 100-point scale, or as a verbal description. The proposed conception of our study is how to design desirability scales for generalized performance based on health risk assessments. We have also developed a Python application for calculating a generalized desirability function that can include an unlimited number of indicators of the quality and properties of drinking water for human, animal, or poultry consumption.

**Keywords:** drinking water, quality, generalized assessment, Harrington function.

## Enhancing Lipase Production of *Bacillus Salmalaya* Strain 139SI Using Different Carbon Sources and Surfactants

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**Abstract:** One of the most important sources of the enzyme is Microbial lipase that has been largely subjugated in the food, detergent, and pharmaceutical industries due to its high catalytic activity, high yield, and environmental friendliness and cost-effectiveness. So, the aim of this study was to enhance the medium for the submerged fermentation for lipase production by a novel strain, *Bacillus salmalaya* strain 139SI. The media exposed to lipase production was Luria Bertani (LB) with different carbon sources and surfactants supplemented to determine which would give the highest lipase activity of *Bacillus salmalaya*. The Lipase activity of the supernatant having lipase enzyme was determined using the titrimetric method with hydrolysis reaction. Outcomes presented that the olive oil that was used as a carbon source, tempted the highest lipase activity (11.0 U/ml) related to sunflower oil (9.6 U/ml) and cooking oil waste (7.8 U/ml). For surfactants, LB medium supplemented with tween 80 enhanced higher lipase activity (6.8 U/ml) compared to tween 20 (6.0 U/ml) and sodium dodecyl sulphate (SDS) (2.0 U/ml). Thus, it can be determined that submerged fermentation permits optimization of the culture medium whereby, among carbon sources, olive oil persuaded the highest lipase production, whereas Tween 80 was the best lipase inducer related to other surfactants.

**Keywords:** Lipases; carbon source; cosurfactant; *Bacillus salmalaya*; FOG.

## Modern Methods of Diagnosing Intraoral Halitosis

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### **Abstract:**

The origin of halitosis comes from the Latin word "halitus" meaning 'breath, exhaled air. The human body emits some volatile molecules, which have a peculiar odor. Their presence is influenced by several factors, such as genetic, nutritional and psychological factors. Since bad breath belongs to taboo subjects, halitosis can often lead to social isolation. According to studies, intraoral halitosis is 85-90%, extraoral - 10-15%. The pathogenesis is based on biochemical reactions that convert the proteins of food residues into volatile sulfur-containing compounds. They create not only an unpleasant odor and taste but are also toxic to periodontal tissues. The research aims to study of the modern methods of diagnosing intraoral halitosis. Study of 50 journals included in high indexing databases. Subjective methods include: 1) Assessment of exhaled air through the nose; 2) Test with a napkin on the back of the tongue; 3) Evaluation of the color and smell of dental floss; 4) Test on your wrist; 5) Organoleptic method carried out by a professional expert. The method is good because 1) gives integral information about the smell of the patient's breath; 2) does not require special equipment; 3) is often used in the clinic. The negative sides are: 1) negative perception of the method by the patient; 2) the subjectivity of the expert's opinion. Objective diagnostic methods. Sulfide monitoring with halimeters. The principle of operation is based on the use of a semiconductor gas sensor. The method is successful, does not require special training, has mobility and, is low cost. The disadvantage is that there is no differentiation of linear solvent strength (LSS). There are many methods for diagnosing intraoral halitosis, but there is no ideal method, which motivates the further study of this problem and the search for more effective methods.

**Keywords:** halitosis, intraoral, diagnostic methods

## First evidence of *Teladorsagia Circumcincta* infection in sheep from Egypt

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### Abstract:

Trichostrongylid nematodes are a common cause of gastroenteritis in sheep. Despite its worldwide distribution, *Teladorsagia circumcincta* has not been included in reports listing the various trichostrongyles infecting sheep from Egypt. Herein, we describe the presence of 2 *T. circumcincta* haplotypes infecting small ruminants from Egypt. For this study, fresh fecal samples were collected from 340 sheep and 115 goats reared at 5 districts in Dakahlia governorate and its surroundings, Egypt. Trichostrongyle eggs were harvested from the samples, and then subjected to DNA isolation and analysis. Polymerase chain reaction (PCR) amplification was carried out for the second internal transcribed spacer of ribosomal DNA (ITS2 rDNA). Purified PCR products of *T. circumcincta* were sequenced, and the revealed sequences were subjected to the nucleotide and phylogenetic analysis. A relatively high prevalence of trichostrongyles eggs was identified in sheep (33.2%) and a lower prevalence was found in goats (14.7%). Molecular analysis revealed, for the first time, 2 sheep herds from Egypt that were infected with *T. circumcincta*. Both infected herds were raised by the Bedouins in rural areas of El Mahalla El Kubra city. No *T. circumcincta* infections were found in any of the goats. Nucleotide sequence analysis revealed 2 haplotypes (Te1 and Te2) from 7 successfully sequenced samples (5 from the first and 2 from the second herd). Te1 was the major haplotype in both herds, and Te2 was retrieved from a single sample. Phylogenetic analysis displayed that the Te1 haplotype clustered with one from Cyprus, which might have been introduced to Egypt via goats imported from Cyprus due to a program to improve meat and milk production in Egypt. The present results could be beneficial in understanding the epidemiology of *T. circumcincta* and other trichostrongyles in Egypt, and have implementations in the effective control strategies used in this region.

Keywords: Trichostrongyles, *Teladorsagia circumcincta*, ITS2, Sheep, Goat, Egypt.

## Detection of resistance genes *mecA*, *VanA*, and *VanB* in *Staphylococcus aureus* bacteria isolated from patients attending Aleppo University Hospital

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### Abstract:

*Staphylococcus aureus* is one of the most dangerous bacteria to public health due to its resistance to many antibiotics, such as MRSA and vancomycin VRSA. 256 samples were collected from patients attending Aleppo University Hospital and from healthy, non-hospitalized people. The bacterial type was determined based on its morphological characteristics and its biochemical tests and depending on the 16s rRNA gene, and the resistance and sensitivity of isolates to methicillin and vancomycin was studied by disc diffusion method according to Kirby-Bauer. The *mecA*, *vanA*, and *vanB* resistance genes were detected in isolates tested using PCR reaction. The isolation rate of *Staphylococcus aureus* was 28.9% of the total number of samples, of which 62.16% were methicillin-resistant MRSA, while they were 100% sensitive to vancomycin inhibitor. The rate of detection of the *mecA* gene was 72.97%, while no isolates carrying the *vanA* and *vanB* resistance genes were obtained. This indicates the prevalence and prevalence of MRSA-resistant *Staphylococcus aureus*, while the results indicated that vancomycin-resistant strains did not spread in Aleppo University Hospital and this was confirmed by the results of the molecular study.

**Keywords:** *Staphylococcus aureus*, bacterial virulence factors, *mecA*, *vanA*, *vanB*.

## Development of Chitosan Based Microencapsulated Spray Dried Powder of Tuna Fish Oil: Oil Load Impact and Oxidative Stability

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### Abstract

Fish oil from marine sources especially tuna fish oil, categorized as functional food as they constitutes of polyunsaturated fatty acids especially Eicosapentaenoic acid and Decosahexaenoic acid which are involved in resolving a number of issues related to heart, brain, immunity and inflammation. However, reaction of lipids with oxygen resulting in compounds that can cause harm full effects to health and must be prevented. The impact of fish oil concentration on the oxidative stability of microcapsules through the spray drying process using chitosan and maltodextrin as wall material was studied. Emulsions were prepared with different Tuna fish oil (TFO) content (TFO-10%, TFO20%, TF030% TFO-40%) while wall material concentration was kept constant. Microencapsulated powder resulting from emulsion prepared with high fish oil load have high moisture content, wettability and total oil and low encapsulation efficiency, hygroscopicity and bulk tapped density. Oxidative stability was evaluated periodically by placing microcapsules at room temperature. Microcapsules prepared with TFO-10% presented high oxidative stability in terms of peroxide value ( $2.94 \pm 0.04$ ) and anisidine value ( $1.54 \pm 0.02$ ) after 30 days of storage. It was concluded that optimal amounts of fish oil for microencapsulation are 10% and 20% using chitosan and maltodextrin that extended its shelf life during study period.

**Key words:** microencapsulation, tuna fish oil, emulsion, chitosan, oxidative stability

## Biochemistry and Hematological Profile of Catfish (*Heterobranchus longifilis*) Reared in Semi Intensive System

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### Abstract:

This study was conducted to examine the normal biochemistry and haematological profile of blood of twenty healthy cat fish (*Heterobranchus longifilis*) reared in ponds made of concrete. For this investigation equal sex and two different age level cat fishes were used. Results of blood biochemistry and haematological profile of adult and young *Heterobranchus longifilis* showed significant ( $p < 0.05$ ) difference while sex had insignificant results ( $p > 0.05$ ). Adult cat fish white blood cell count  $10^3 / \mu\text{l}$  ( $22.51 \pm 0.95$ ), packed cell volume ( $33.00 \pm 0.87$  %), average corpuscular haemoglobin ( $45.69 \pm 1.15$  pg), average corpuscular volume ( $141.42 \pm 2.83$  fl), alanine amino transferase ( $38.86 \pm 0.16$  IU), total proteins ( $3.86 \pm 0.10$  g/dl), albumin ( $1.53 \pm 0.06$  g/dl), aspartate amino transferase ( $49.55 \pm 0.34$  IU), alkaline phosphatase ( $9.33 \pm 0.55$  IU), plasma blood glucose ( $171.67 \pm 9.05$  mg/dl), globulin ( $2.40 \pm 0.08$  g/dl), calcium ( $11.68 \pm 0.71$  mg/dl), total cholesterol ( $156.52 \pm 5.69$  mg/dl) and total body weight ( $666.67 \pm 39.97$  g) significantly ( $p < 0.05$ ) higher than young *Heterobranchus longifilis*. Haemoglobin concentration, blood urea nitrogen, average corpuscular haemoglobin concentration and red blood cell count were not significantly different in adult and young *H. longifilis*. On the other hand blood biochemistry profile and haematological factors between the sexes were insignificant ( $p > 0.05$ ). From this study it is concluded that normal blood biochemistry and haematological profile is important to detect pathological changes in specific organs.

**Keywords:** *Heterobranchus longifilis*, catfish, blood biochemistry profile, haematological parameters

## Accumulation of radioactive cesium in marine fish used in North Macedonia

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### Abstract:

The understanding and information on radioactive contamination of fish are important in order to assess the potential effects of radionuclide contamination on human health. Cs-137 can be accumulated in marine organisms and marine food chains, but to a lesser extent than in the terrestrial environment. Fish can ingest Cs-137 directly from the water and through their food, and it can be accumulated in their muscle tissue. Although many studies have shown that the level of radioactive cesium in marine fish is below the limits of experimental detection of several Bq kg<sup>-1</sup>, significant public concern has been expressed about the safety of consuming marine fish that originates from different countries, to the Republic of Macedonia. In order to control the fish that is being imported to Macedonia and is being consumed without analyses of different types of fish for the presence of radioactive cesium, radiocesium levels were measured by means of a standard gamma spectroscopy system, with a high-resolution HPGe detector. The instrument is with an active volume of 180 cm<sup>2</sup>, a relative efficiency of 30% and a resolution of 2 keV at 1332.5 keV. None of the analyzed fish samples in this study contained any observable levels of Cs 137, i.e. the values were less than 1 Bq kg<sup>-1</sup>. The low concentrations of radiocesium in the examined marine fish are ascribed to the low physiological ability to retain the radiocesium that they receive, and at the same time fish in salt water accumulate significantly less Cs-137 than fish in fresh water. We can say that on the basis of the current situation, without new sources of radioactive contamination, it is expected that the level of radiocesium will continue to decline.

Key words: radioactivity, gamma-ray spectrometry; fish; radiocesium

## Effects of Resveratrol on Urinary Bladder Cancer

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### Abstract:

Resveratrol is a low molecular weight polyphenolic phytoalexin belonging to the stilbenoid family and was first isolated from *Veratrum grandiflorum* by Takaoka in 1939. Apart from the root of *Polygonum cuspidatum*, resveratrol is also found in high levels as a dietary compound in grapes, wine, strawberries, peanuts, various plant seeds, and teas. Although the use of this compound as a nutraceutical has numerous positive effects on health, the fact that it has a preventive effect against various types of cancer in mammals and especially skin cancer by Pezzutto *et al.* in 1977 has made resveratrol very popular after this date. When the literature is examined, it is seen that the anticancer effects of resveratrol have been investigated *in vivo* and *in vitro* in many cancer types, especially colon cancer. On the other hand, information on the effect of resveratrol on bladder cancer (BC), one of the most important urological malignancies, is limited. Within the scope of this study, a search was made on the PubMed database using the MeSH terms ["resveratrol" AND "bladder cancer"], and studies on the subject between 2005 and 2021 were examined. As a result of the study, it was observed that resveratrol inhibited cell viability and proliferation in MK cell lines, suppressed cell migration, invasion, and adhesion, arrested the cell cycle in G1 and S phases, increased cell permeability, reactive oxygen species level, and DNA fragmentation. In addition, it was understood that resveratrol activates apoptosis both by regulating the Akt/Bcl-2 signaling pathway through inhibition of miRNA-21 and by regulating the mitochondria-dependent intrinsic pathway through mitochondrial dysfunction. In addition, resveratrol combined with doxorubicin or gemcitabine has been shown to increase the bioavailability of chemotherapeutics by sensitizing chemoresistant MK cells. In addition, *in vivo* analyzes showed that resveratrol significantly reduced tumor growth in xenograft MK models performed in BALB/c-nude mice. In conclusion, experimental studies indicate that resveratrol is a promising compound for clinical treatment in BC, but it can be said that more studies are needed on the subject.

**Keywords:** Resveratrol, Nutraceutical, Bladder Cancer, Cell Line, Xenograft

## Teaching Practical Lessons On Medical Biology And General Genetics In English

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### Abstract:

The object of research: didactic features of practical classes in institutions of higher education.

The subject of research: scientific and methodological aspects of organizing and teaching practical classes at the subject medical biology and general genetics in English. The purpose of the thesis: is to reveal scientific and methodological aspects of organizing and teaching practical classes in the discipline of medical biology and general genetics in English. Research methods: theoretical methods (analysis, review, and systematization of pedagogical and methodological literature, research on the problem of teaching foreign students); empirical methods (study and generalization of teaching experience; observation of students' learning activities in practical classes; analysis of students' learning activity scores; conversation, discussion; statistical data analysis (methods of mathematical data processing). Data processing of the survey (questionnaire) was carried out using MS office excel 2010. The results received and their novelty: for the first time an analysis of the effectiveness of practical classes in the subject of medical biology and general genetics in the department of biology; identified the features of practical classes with foreign students in English; established ways to improve the effectiveness of practical classes. Applicability: in practical classes at the department of biology of the Gomel State Medical University. Recommendations for the practical use of the results of the thesis work: for the teachers at the department of biology to provide practical classes for foreign students in English: practical case studies should be used as a final class to summarize and consolidate the knowledge and skills of students; too frequent use of standard forms of practical classes may lead to loss of motivation for the subject and the learning process; before using active forms of classes, carefully prepare the students for the practical case. The practical significance of the study is due to the improvement of methodological guidelines for foreign students, recommended for use in the educational process for practical classes at the subject medical biology and general genetics in English. The guidelines we developed can be used by teachers in preparing and organizing practical classes with foreign students in English.

**Keywords:** practical class, foreign student, teacher, self-study, test, score

## VASORELAXANT EFFECT OF ISOXYNOLOINE ALKALOIDE F-19 ON PRECONTRACTED RAT AORTIC RINGS

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The most common pathology of the cardiovascular system is arterial hypertension, which is one of the main pathophysiological factors of the risk of developing most cardiovascular diseases. In the development of arterial hypertension, vascular smooth muscle cells lie in a violation of the regulation of the  $\text{Ca}^{2+}$  ion transport system. In this regard, smooth muscle cells (SMC)  $\text{Ca}^{2+}$  - the search for new approaches to the correction of disorders of homeostasis is currently considered a topical problem in cardiology and pharmacology, the solution of which allows the development of effective methods of prevention and treatment of arterial hypertension. In recent years, particular attention has been paid to plant compounds such as flavonoids and alkaloids with broad pharmacological properties in the development of new drugs for the treatment of arterial hypertension. With this in mind, we have intended to study the vasorelaxant effect of the alkaloid F-19 isoquinoline on rat rat aortic drug. The vasorelaxant activity of F-19 was examined using standard organ bath techniques and endothelium intact rat aortic rings, precontracted by phenylephrine and by a high KCl (50 mM). The results of the present research clearly show that F-19 isoquinoline alkaloid induced relaxation of rat aortic smooth muscle following precontraction induced by phenylephrine or high  $\text{K}^+$  in a concentration-dependent manner. This observation of relaxation effect of F-19 is consistent with the previous report that F-19 possessed a direct vasodilatory effect on vascular smooth muscle. Contractions induced by phenylephrine are due partly to calcium release by intracellular stores ( $\text{IP}_3$  receptor) and partly to the influx of extracellular calcium into the cell via receptor-operated channels following the stimulation of  $\alpha_1$ -receptors. It has also been reported that high  $\text{K}^+$  concentrations cause marked contractions in blood vessels by depolarization of smooth muscle fibres, leading to increased influx of calcium through L-type voltage-dependent channels. Based on the results of the experiments and the analysis of literature data, it was suggested that the vasorelaxant effect of the alkaloid F-19 was associated with the blockade of  $\text{Ca}^{2+}$  ( $\text{IP}_3\text{R}$ ) channels in the SR, along with voltage-dependent and receptor-operated  $\text{Ca}^{2+}$  channels in the aorta smooth muscle cell plasmalemma.

## Seasonal and pregnancy effects on mineral serum changes in local rabbits in Tiaret, Algeria

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### **Abstract:**

The present study aimed to assess the season and pregnancy influence on minerals serum of local rabbits raised in semi-arid climate type. Fifty-nine multiparous does was used in this study. The semi-intensive rhythm of reproduction was used. All pregnant does were at the late stage of pregnancy at the sampling date. Serum samples were collected in two seasons: winter and summer. In this study, biochemical parameters concentrations of pregnant rabbits were significantly higher ( $p < 0,05$ ) compared with nonpregnant rabbit. The value of biochemical parameters total protein, albumin, triglyceride, cholesterol, calcium, and phosphorus changed significantly. In this study, most parameters were influenced by pregnancy.

**Keywords:** Rabbits, Serum minerals, Season, Pregnancy

## Moisturizing and antimicrobial properties of *Hedera helix*

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### Abstract:

*Hedera helix* is a plant from the *Araliaceae* family. It is a rich source of triterpene saponins, flavonoids, phenolic acids and carotenoids. As a herb, it is known for its beneficial effects on the upper respiratory tract, inhibiting dry cough. Its anti-cellulite, anti-edema and antimicrobial properties are also proven. To confirm the antimicrobial properties of the *Hedera helix* oil extract and to demonstrate the effect of ointment containing the *Hedera helix* oil extract on the level of hydration of the stratum corneum. An oil extract was made from the leaves and roots of the *Hedera helix*. The extract obtained was then used to create an ointment. The oil extract has been microbiologically tested. Baird – Parker Agar, MacConkey Agar, Cetrimide Agar and Sabouraud Chloramphenicol Agar were used. One ml of fresh bacterial or fungi culture was pipetted in the center of sterile Petri dishes. 100 µl of oil macerates and salves dissolved in sterile 0,9% NaCl were added into sterile paper discs placed on the dishes mentioned above. The plates were incubated at 37°C for 18 h – 48 h. Antimicrobial and antifungal activity was detected by measuring the zone of inhibition after incubation period. The degree of skin hydration and transepidermal water loss were determined with the help of a Corneometer® CM 825 and by the Tewameter®™ 300. Oil extract has antimicrobial activity against *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans*. Corneometric tests showed an improvement in the hydration of the stratum corneum after the application of an ointment. Tewametric tests showed a reduction in transepidermal water loss in the studied area after applying an ointment. The oil extract has an antimicrobial effect. The ointment improves the level of hydration of the stratum corneum.

**Keywords:** *Hedra helix*, moisturizing effect, antimicrobial effect

## Preoperative Pulmonary Rehabilitation in Lung Transplant Candidates: Scoping Review

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### **Abstract:**

Implementation of pulmonary rehabilitation (PR) during the waiting period for lung transplantation (LTx) is one of the routine applications of transplantation centers. There are few studies related to PR practices in this period. The content and effects of PR vary in these cases in the terminal stage. The aim of this study is to examine the effectiveness of PR in lung transplant candidates. Before February 2022, two main databases were searched: PubMed and Web of Science. The search was limited to in the last 5 years. Articles on pulmonary rehabilitation in lung transplant candidates were included. Key words were "lung transplantation", "preoperative" and "pulmonary rehabilitation". A total of 20 articles were found without time constraints. When the time interval was chosen as the last 5 years, a total of 5 articles were identified. After reading the full texts, 2 studies were found that fulfil the inclusion criteria. One of these articles was a review and one was a randomized controlled trial. In the review study, researchers were reporting positive effects of PR on quality of life and exercise capacity. The second study was a randomized controlled trial and it was reported that PR improved exercise capacity, muscle strength and decreased the perception of dyspnea. Preoperative PR has positive effects on the clinical status of the waiting list LTx candidates. Preoperative PR improves the exercise capacity and muscle strength of the patients and positively affects the quality of life. More randomized controlled studies and meta-analyses are needed on this subject.

**Keywords:** lung transplantation, pulmonary rehabilitation, exercise, quality of life.

## An Outbreak of Abortions Associated with Border Disease Virus and *Chlamydomphila Abortus* Co-infection in Sheep Flocks

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### **Abstract:**

Infectious abortion is one of the most important health problems in small ruminants husbandry worldwide. Viral, bacterial, parasitic and mycotic infectious agents can cause abortion in small ruminants. In January 2016, during the lambing season, an unusual high rate (43.75%) of abortions, stillbirths and congenital malformations were observed in two sheep flocks in Niğde Province. Aborted sheep fetuses and EDTA whole blood samples from mother of the fetuses were collected from two sheep flocks. Total nucleic acid extraction was carried out from the organ specimens of aborted fetuses and buffy coat cells from whole blood samples. Nucleic acid extracts were tested for the presence of pestiviruses, akabane virus (AKAV), bluetongue virus (BTV), peste des petits ruminants virus (PPRV), Schmallenberg virus (SBV), *Brucella spp.*, *Listeria spp.*, *Coxiella burnetii* and *Chlamydomphila abortus* (*C. abortus*). Border disease virus (BDV) RNA and *C. abortus* DNA were detected in aborted sheep fetuses. However, *Brucella spp.*, *Listeria spp.*, *Coxiella burnetii* DNA, and AKAV, BTV, PPRV and SBV RNA were not detected in the investigated samples. Furthermore, BDV RNA was also detected in EDTA whole blood samples from mother of the fetuses. To the best of my knowledge, this is the first report on the dual infection of aborted sheep fetuses with BDV and *C. abortus*.

**Keywords:** sheep, abortion, border disease virus, *chlamydomphila abortus*

## Reuse of the intraosseous part of the dental implant (the clinical case)

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### Abstract:

The aim. Show the possibilities of reuse of the intraosseous part of the dental implant after fracture of the orthopedic structure together with the abutment in the area of 11 teeth. Long-term observation of the functioning of the endosseous implant, made in 1995, in patient J., born in 1977. Careful examination of the stability of the intraosseous part of the implant after abruption of the abutment in 2015 in order to address the issue of its further use for the pin structure. The stability of the intraosseous part for further functioning has been established by its careful examination. A wide canal with smooth walls was created in the abutment due to the impossibility of detaching the rest of the abutment from the intraosseous part. An artificial stump with a pin by laboratory method and a metal-ceramic crown were made according to the classical method. There was a pathological mobility of the implant, due to which it had to be removed together with the orthopedic structure in 2020. Thus, the period of use of the intraosseous part of the implant left after the abutment fracture was extended for another five years. Refusal of traumatic removal of the intraosseous part of the implant was based primarily on the need to preserve the volume and structure of bone tissue in the frontal area. There is no need to remove the remaining part of the fractured implant urgently if the intraosseous part has the close contact with the bone of the alveolar process of the upper jaw and can be used as a support for the pin structure. The broken abutment with an prosthetic structure can be replaced by an artificial stump with a metal-ceramic crown. The total period of use of the intraosseous implant immersed in the alveolar process of the upper jaw was twenty-five years. Delaying the removal of a well-integrated intraosseous part of the implant is a positive moment for the patient not only from a clinical but also from a financial point of view.

Keywords: upper jaw, abutment, intraosseous part of the implant, artificial stump with a pin, metal-ceramic crown.

## Vaginismus in Iraqi women

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### Abstract:

Vaginismus is a rarely reported sexual problem of women. Only 7% of the female population may have such problems as per the literature evidence. However, such problems are associated with marital and social issues that can impact the patient's life tremendously. Medical science is having appropriate treatments for this condition which may differ from case to case. However, the pathophysiology and the clinical cause of vaginismus are poorly understood and the treatment outcomes are also not certain or standardized. The present study was designed to understand the clinical conditions of Vaginismus concerning various demographic, clinical, and societal parameters. Apart from the clinical investigations, this study was aimed to understand the influence of various parameters such as age, duration the patient took to sought medical help, and gravid condition on the Botox dosage used for the patients. The plausible role of different blood groups as factors was also verified statistically.

A total of 38 patients were selected for this study and all the clinical conditions were recorded. Independent sample T-Test and logistic regression were considered to explore the relationship among the mentioned variables. The mean patient's age of the study population (n=38) was 26.91 ( $\pm 6.95$ ) years. The majority of the patients (n=14), were having an "O<sup>+</sup>" blood group, followed by "A<sup>+</sup>" (n=11), and "B<sup>+</sup>" (n=9). Extensive delay in seeking medical help was observed for the patients (22.7 $\pm$ 25.24). The maximum delay period for medical attention was 96 months. Statistical analysis for plausible relation of patient's age, and treatment delay concerning the botox dosage applied (150 units and 200 units) was not significant (p=0.18). The statistical analysis of Botox dosage used with respect to the gravid condition and other parameters did not project any significant relation (p=0.51). We have observed some statistically insignificant relation among the parameters considered in the present study; however, such observations are subjected to further clinical evaluation. Further analysis with a larger dataset may establish the observed relations

**Keywords:** vaginismus, painful intercourse, botox.

## Black Cumin And Its Effects On COVID-19

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### **Abstract:**

Black cumin is an indigenous herbaceous plant that has been used for centuries to treat various illnesses. Because of the bioactive components of black cumin, it is seen as a potential herbal treatment for patients infected with COVID-19. The specific objective of this study was to investigate the bioactive constituents of black cumin seed and their effects on COVID-19. Therefore, the main issues addressed in this study are, the bioactive components of black cumin and their activities on patients infected with COVID-19. Black cumin includes antiviral, antioxidant, anti-inflammatory, anticoagulant, immunomodulatory, bronchodilatory, antihistaminic, antitussive, antipyretic, analgesic elements. Furthermore, Black cumin has also anti-hypertensive, anti-obesity, anti-diabetic, anti-hyperlipidemic, anti-ulcer, and antineoplastic effects which would help the COVID-19 patients with comorbid conditions. The nigellimine and thymoquinone found in black cumin might be considered as potential bioactive components to treat patients infected with COVID-19. COVID-19 infection can induce the overproduction of numerous reactive oxygen species. The antioxidant activity of black cumin may help to alleviate oxidative damages to the organs. Moreover, the anti-inflammatory activity of black cumin may reduce the effects of the cytokine storm. Significant coagulopathy could be seen in severe COVID-19 infections. The anticoagulant effect of black cumin seed revealed that it has prolonged the coagulation time for a while. Overall, these results indicate that black cumin could be seen as a potential herbal treatment for patients infected with COVID-19.

**Keywords:** *nigella sativa*, black cumin, covid-19, antioxidant, anti-inflammatory

## The Importance of Cerebrospinal Fluid in Veterinary Medicine

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### Abstract:

The aim of this study is to emphasize the properties of cerebrospinal fluid, how it is taken, its benefits in diagnosing diseases and its importance in veterinary medicine. Participating in the metabolism of the central nervous system, feeding the nervous tissue and being the mechanical protector of the central nervous system are among the main tasks of the cerebrospinal fluid. Removal of cerebrospinal fluid differs according to the animal species. The lumbosacral region is preferred in large animals, while the atlanto-occipital region is preferred in small animals. While it is the junction of the lumbar 6 - sacral 1 vertebrae in large animals, it is the region between lumbar 5 - lumbar 6 in calves. Cerebrospinal fluid removal has benefits such as diagnosing many infectious, non-infectious and tumoral diseases, distinguishing whether inflammatory lesions are toxic, metabolic or traumatic, learning whether irritant contrast agents make a change in the composition of the cerebrospinal fluid, and reducing intracranial pressure. Information is obtained by evaluating parameters such as color, appearance, density, pressure, pH, urea, creatinine, glucose. Aspartate aminotransferase and alanine aminotransferase activity in dogs with distemper disease, creatine kinase activity in diseases such as toxoplasma and infectious peritonitis in cats, creatine kinase and aspartate aminotransferase activity in encephalomalacia in ruminants, and creatine kinase activity in horses in protozoal origin myelitis enzymes increase. As a result, extensive examination of the cerebrospinal fluid, which is known to contain very important data in central nervous system diseases, helps to understand the pathophysiology of central nervous system diseases, confirms its diagnostic evaluation and is very important in terms of evaluating the prognosis of the patients.

**Keywords:** Cerebrospinal fluid, diagnosis, prognosis, veterinary medicine.

## A perspective on the use of Knockout Serum Replacement in the Livestock Semen Extender

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### Abstract:

It is known that livestock animal semen is very sensitive for cold shock during freezing processes, and this sensitivity directly affects post-thaw motility, mitochondrial membrane potential, sperm nuclear DNA integrity, in vitro spermatological parameters such as plasma membrane, acrosome integrity, and sperm fertility. In addition to these, with the sudden decrease in the total antioxidant level of the semen after thawing of the semen, the sperm cells are insufficient to tolerate their damage, and as a result, significant losses in sperm fertility occur. For this reason, researches focused on freezing the semen of livestock animals include semen processing, physiological and metabolic parameters such as freezing (cryopreservation/cryogenic damage) - thawing methods, sperm extenders, antioxidants, and metabolic pathways of the antioxidants and sperm fertility. Because of this reason, Knockout Serum Replacement (KSR) is a rich source of antioxidants, vitamins, proteins, amino acids and trace elements. Recent studies have shown that it is a necessary serum substitute for mammalian cell survival, growth and development *in vitro*. Moreover, the use of KSR with antioxidant effect in the cryopreservation of different cell types has been reported and obtained positive results. KSR provides the activation of AKT (Protein Kinase B), which is a protein structure, as a working mechanism. AKT enables the glucose transport protein (GLUT-4) in the cytosol of the cell to move towards the plasma membrane and allows the entry of glucose, which is its main task here, into the cell. Furthermore, KSR BIM (BCL 2-like protein 11) inhibits cytochrome C (electron-carrying structures for oxidative phosphorylation) originating and secreted from mitochondria, thus it is positively affecting cell viability and preventing apoptosis. Studies have shown that KSR stimulates the formation of mitochondria resistant to BIM, and KSR has a direct and indirect effect on the energy pathways of the cell. The addition of KSR to the extender had a positive effect on sperm acrosome and DNA integrity. It is thought that the use of KSR in semen extenders will be widely used in the further years.

Keywords: KSR, Semen Extender, Antioxidant

## Bacterial Contamination of Placenta and Amniotic Fluid of Pregnant Women

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### Abstract :

Amniotic fluid is defined as a transparent liquid that is present in the uterus during pregnancy. The fetus grows within this sac for 9 months and surrounding with the amniotic fluid .The important of amniotic fluid during the pregnancy period is protects the fetus from exposure to microbial infection, protects the fetus from any trauma, helps to complete the growth of the fetal lungs, helps to grow fetal muscles and bones. In this research, 50 samples of amniotic fluid (25 samples from normal birth and 25 samples from caesarean) were obtained from pregnant women who were born-to-be in Hilla Teaching Hospital and 50 samples of placenta (25 samples from normal birth and 25 samples from caesarean). The result revealed that the number of positive bacteria swaps was 27 (54 percent) isolated from amniotic fluid, while positive placenta samples were 18 (36 percent) from 50 samples and current associations between vaginal contamination and the existence of bacteria in the amniotic fluid. *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, *Klebsiella pneumonia*, *Klebsiella pneumatic* , *Staphylococcus epidermidis*, *Staphylococcus aureus*, *Streptococcus mutans*, *Proteus mirabilis* bacteria were isolated. when study the antibiotic sensitivity by agar disc diffusion method present that all of the bacteria isolates resisted the Penicillin and sensitive to Imipenem antibiotic. The result showed the women undergo repeating vaginal infection by bacteria contain the same bacteria in the amniotic fluid surrounding the fetus during the pregnancy. From this we conclude the present of the bacteria in the amniotic fluid as a result of vaginal infection

**Keyword :** Amniotic fluid, Placenta , Caesarean, Normal birth, Bacteria

## Heavy metals in bee products obtained by bee colonies that were kept in a residential area

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### Abstract:

With the increasing technogenic pollution of the natural environment, the feeding areas of bees are polluted. This affects the accumulation of heavy metals in the body of bees and bee products. The present work has undertaken a study of the content of heavy metals in honey, wax, royal jelly and propolis obtained by bee colonies, the feeding area of which was adjacent to a highway (~5500 cars per day). The bee colonies were at a distance of ~600 m from the highway. Pb, Cd, Fe, Cu, and Zn content. determined in samples of honey, pollen, wax and propolis determined by atomic absorption spectroscopy (KVANT-Z analyzer). Sample preparation consisted in their drying at 102°C to constant weight and subsequent mineralization in hermetically sealed reactive chambers of an analytical autoclave (MKP-04) with nitric acid. Despite the fact that the feeding area of the bees was located near the source of intense technogenic pollution (highway), the content of such hazardous pollutants as Pb and Cd in honey was at relatively low levels and amounted to  $0.4493 \pm 0.091$  and  $0.0068 \pm 0.0009$  mg/kg, respectively. In royal jelly and wax, contamination with these elements was approximately 10% higher than in honey. But flower pollen and propolis were distinguished by high pollution with these elements. In pollen, the content of Pb was  $8.8465 \pm 2.0046$ , Cd was  $0.1085 \pm 0.0060$  mg/kg, and in propolis,  $5.3042 \pm 0.0035$  and  $0.01031 \pm 0.0083$  mg/kg, respectively. Cu, Fe, and Zn in honey and pollen were at levels typical of their content in animal feeds, equaling  $15.4 \pm 1.54$ ,  $105.9 \pm 9.74$ , and  $112.9 \pm 8.01$  mg/kg, respectively. Royal jelly practically has not differ from honey in terms of Cu. But in royal jelly, Fe was less than in honey by 8.1, and Zn by 73 times. In pollen, the content of Cu, Fe, and Zn was close to their content in honey and amounted to  $17.1 \pm 1.05$ ,  $142.9 \pm 11.13$ , and  $54.01 \pm 6.17$  mg/kg, respectively. Propolis slightly differed from pollen in the content of these elements. Thus, pollen and propolis collected by bees in technogenically polluted areas are many times higher than honey and royal jelly in terms of Pb and Cd content. The content of essential elements in pollen is similar to the content of these elements in forage.

**Key words:** Heavy metals, bee products, pollen

## Smoked Fish Consumption and Health Effects

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### Abstract:

The smoked process is carried out in order to provide a protective effect on fishery products in accordance with the improving the taste, color, appearance and texture of these products. Due to the effects of the components of smoke cause to increase the shelf –life of smoked fish. On the contrary, during storage in smoked fish products sensory, chemical and microbiological changes it occurs and these changes negatively affect human health. On the surface of the smoked fish products at the beginning of deterioration watering and mold formation, loss of flesh color and then the pain caused by fat oxidation the formation of taste is observed. As for microorganisms, although most of them are inhibited because of the antibacterial effect of smoke or heat treatment, its spores do not die, and this ensures the development of microorganisms harmful to human health in the fishery products offered for consumption. During the smoked process of fish, some carcinogenic compounds of smoke can also be formed or appeared and these polycyclic aromatic hydrocarbons (PAHs) compounds have bad effects on the smoked fish products. Pyrene, naphthalene, chrycene, fluorene, benzo(a)pyrene, phenanthrene, benzo(a)anthracene, anthracene can be given an example of these PAHs compounds that they have carcinogenic risks on human health in terms of the consumption of smoked fish. Reducing the temperature in the smoking oven and using a special filter system between the food and incense during the diffusion of incense into the product also reduces the formation of these components. If insufficient heat treatment and time were applied on smoked fish, some of the microorganisms can be alive and grow on smoked fish during storage. Smoked fish can also be contaminated during packaging, transportation and marketing periods. With advanced packaging technology, it is possible to minimization of the spoilage and pathogen microorganisms in smoked fish products with the help of innovative methods is an important issue that has been focused on in recent years. Consequently, in this review, especially the consumption of smoked fish and its health effects are discussed.

**Keywords:** fish, smoked fish, consumption, health

## Single Port (Less) Laparoscopic Surgeries on Various Tubo-Ovarian Pathologies as a New Innovative Endovideo Technology - Application and Evaluation of the effect

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The aim of the research is to study the single port (less) laparoscopic surgeries on various tubo-ovarian pathologies as a new innovative endovideo technology - application and evaluation of the effect. In modern world-class surgical practice, endovideo operations are performed in the form of robotic laparoscopic surgical systems, transluminal surgery (NOTES) and single-port surgical techniques (SILS / LESS). After standard laboratory and instrumental examinations and confirmation of the gynecological diagnosis, 30 patients of the main group of reproductive function at the age of 17-43 under dynamic observation underwent laparoscopic surgery using the SINGLE PORT (LESS) method using COVIDIEN endoscopic instruments. Eight patients were operated on based on the diagnosis of tubal pregnancy, 19 on the basis of ovarian cysts and 3 on the basis of hydrosalpinx. The main direction of the study was the statistical separation of the comparison group of 30 other patients who underwent classical laparoscopy from the main group of patients. Tubectomy were performed in all patients with a similar diagnosis. Each of the patients diagnosed with an ovarian cyst was decided to perform a cystectomy, salpingectomy with hydrosalpinx. Postoperative pain was relatively mild in patients treated with the SINGLE PORT method. The anterior abdominal wall was examined and a visual assessment of the postoperative scar tissue within the navel was made. The skin suture deep in the navel is completely hidden, therefore, we consider the LESS method more effective in terms of achieving a successful cosmetic result than the traditional method. Considering the risk of injury, delayed infection of the hole, minimization of hernias, and faster rehabilitation of the patient, its use as a method of universal minimally invasive surgery should be planned and important for a wider range of surgical gynecological pathologies.

**Keywords:** laparoscopic Surgeries, tubo-ovarian pathologies, tubectomy

### Clinical Aspects Enteropathic Acrodermatitis

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#### Abstract:

Symptoms of enteropathic acrodermatitis associated with a congenital disorder of zinc metabolism appear in infancy. The purpose of the research is to study the features of the course of enteropathic acrodermatitis, taking into account the age of the child. There were 23 patients, at the age of up to 3 months - 5, from 3 months up to a year - 9, from a year to 2 years - 7, and over 4 years - 2 children. The principle of dividing patients into groups was carried out according to the clinical picture of the disease. In 19 children (the first group), the parents were in a consanguineous marriage, three of them were members of the same family. The triad of symptoms: dermatitis, diarrhea, alopecia was observed in all children of the first group, and children under the age of 1.5 years prevailed. The rashes were symmetrically located on the skin of large folds, around the mouth, eyes. In 15 patients, paronychia was observed on almost all fingers. In addition, there were pronounced phenomena of conjunctivitis, blepharospasm and photophobia. Children of the second group (3 children) had manifestations on the oral mucosa: glossitis, stomatitis, seizures. Rashes on large folds had a bizarre shape with clear boundaries of saturated red color with pronounced maceration. The third group included only one patient - a boy aged 4 years, who had balanoposthitis, dystrophic changes in the nail plates, hyperkeratosis of several toes. There were no symptoms of diarrhea and alopecia in the last two groups. The course of enteropathic acrodermatitis is favorable but depends on accurate diagnosis and timely treatment. A systematic dispensary observation of patients by a dermatologist and a pediatrician with control over the maintenance dose of zinc preparations is necessary since the cessation of such treatment can cause a relapse and progression of the disease.

**Keywords:** acrodermatitis, congenital disorder, zinc metabolism

## Temporomandibular Injury Joints in Rheumatoid Arthritis

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### Abstract:

In 80% of patients, the rheumatoid arthritis (RA) disease manifests itself at a young and middle age of 35-50 years. With age, the number of cases of this disease increases. Women get sick 3 times more often than men. In Azerbaijan according to a large-scale clinical study, RA affects 0.6% of the population. The aim of the research is the study of patients with temporomandibular injury joints in rheumatoid arthritis. Our studies show that more than 50% of RA patients clinically demonstrate TMJ involvement. And in 20% of cases, rheumatoid arthritis debuts precisely from the lesion of the temporomandibular joint, and therefore, early differential diagnosis is of great clinical importance. While practicing rheumatologists argue about the rarity of the primary lesion of the TMJ in RA. The manifestations of TMJ RA are similar to those described for other joints: pain, swelling, impaired mobility and crepitus. Clinically, there is pain during movement of the joint, with external palpation, morning stiffness, and a decrease in masticatory strength. Other signs of TMJ arthritis are headaches, ringing in the ears, clicking and crepitus in the TMJ, limited mouth opening (only 5-10mm), and deflexion. The relationship between RA and bone changes in the structures of the TMJ diagnosed by CBCT has been proven. The presence of degenerative bone changes was found in 90% of patients, the most common of which was flattening of the articular process of the lower jaw (78.7%) and osteophytes (39.3%). The asymptomatic nature of the TMJ lesion in RA may obscure structural lesions seen on imaging. Thus, further in-depth study of the issue is necessary to develop programs for the prevention and treatment of manifestations of rheumatoid arthritis in the TMJ and to resolve the issue of the timing of dispensary observation of patients by dentists.

**Keywords:** rheumatoid arthritis, temporomandibular injury joints, degenerative bone changes

## Analysis of the Diagnostic Value of Some Tumor Markers and Cytokines

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### Abstract:

CA 15-3, CEA, and certain cytokines (IL-2, IL-6, IL-8, IL-10, TNF-) were studied for their sensitivity, specificity, and diagnostic usefulness in patients with breast cancers (benign and malignant neoplasms). We looked at 92 patients who were diagnosed with breast cancer and were between the ages of 18 and 79. Malignant tumors were found in 48 of the patients, whereas benign breast tumors were found in 28. The control group consisted of 16 virtually healthy women. Serum levels of CEA, CA 15-3 tumor markers, and the key pro- and anti-inflammatory cytokines (IL-2, IL-6, IL-8, IL-10, and TNF-) were measured in the blood of all women in the study. When assessing the malignancy of a breast tumor, the sensitivity of CA 15-3 was  $93.8 \pm 3.5\%$ , specificity  $89.3 \pm 5.8\%$ . For CEA, these parameters were  $89.6 \pm 4.4\%$  and  $78.6 \pm 7.8\%$ , for IL-2 -  $70.8 \pm 6.6\%$  and  $60.7 \pm 9.2\%$ , for IL-6- $85.4 \pm 5.1\%$  and  $82.1 \pm 7.2\%$ , for IL-8- $85.4 \pm 5.1\%$  and  $78.6 \pm 7.8\%$ , for IL-10- $60.4 \pm 7.1\%$  and  $78.6 \pm 7.8\%$ , for TNF- $\alpha$  -  $56.3 \pm 7.21\%$  and  $82.1 \pm 7.2\%$ , respectively.. The tumor marker CA-15-3 has a strong diagnostic value in breast cancer, while IL-6 and IL-8 have the highest sensitivity. It can be inferred that these laboratory measures can be useful in the investigation of pathogenetic pathways of development in breast cancer diagnosis and monitoring.

**Keywords:** CA 15-3, CEA, IL-2, IL-6, IL-8, IL-10, TNF- $\alpha$ , breast tumors.

## Autoimmune Chronic Thyroiditis

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### Abstract

Autoimmune thyroiditis (AIT) is a group of autoimmune thyropathy specific to the body, caused by a genetically determined defect in immune tolerance to thyroid antigens, resulting in autoimmune damage. The study aimed to analyze the literature on the role of biochemical parameters in patients with autoimmune thyroiditis. Scientific articles published in 2005-2014 years. The incidence of AIT is 0.3-1.5 per 1,000 population per year, and the incidence of this disease in women is 4-10 times higher than in men. Diagnosis of AIT is based on some characteristics: the presence of antithyroid antibodies, ultrasound examination, hypoechogenic and heterogeneous parenchyma of the gland, the combination of increased thyroid-stimulating hormone (TSH) levels in blood plasma with normal or low levels of triiodothyronine and thyroxine. During autoimmune diseases of the thyroid, the level of immunoregulatory proteins (alpha-2-macroglobulin) in the blood changes.  $\alpha$ 2-MG and lactoferrin are potential immunogens; the concentration of their IgG complexes increases during inflammatory, especially autoimmune diseases.  $\alpha$ 2-MG is an inhibitor of proteinases released during inflammation, is a carrier of hormones and cytokines, it involves in the recognition and presentation of infectious antigens, regulation of proliferation and apoptosis, tissue reconstruction. According to recent research, the incidence of hypothyroidism with or without AIT is increasing. Now generally accepted that the risk of developing HT is from a combination of genetic predisposition and environmental factors that lead to the development of an autoimmune reaction to impaired immune tolerance and thyroid tissue.

**Keywords:** AIT, HT, TSH

## Effects of Lysine and Phytase Supplementation on Growth Performance, Meat Quality and Bone Characteristics in Japanese Quail

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### Abstract:

Lysine is an essential amino acid added in poultry diet to enhance the growth and meat production. On the other hand, phosphorous is one of the expensive inorganic nutrient and its availability is ensured by adding phytase in diet. Rapid growth rate of poultry birds calls for a reconsideration of inclusion rates and new dietary combinations to improve the meat production and traits. Total of 240 quail chicks were randomly divided into 8 groups (5 replicates and 6 birds/replicate). The control group (CONT) received commercial diet (CD), group-2 received CD+5g lysine, group-3 received CD+8g lysine, group-4 received CD+11g lysine, group-5 received CD+500 phytase units/kg, group-6 received CD+5g lysine+500 phytase units/kg, group-7 CD+8g lysine+500 phytase units/kg and group-8 received CD+11g lysine+500 phytase units/kg. Bodyweight was measured every week to calculate FCR (feed conversion ratio). On day 35, two birds from each replicate (10 from each group) were selected for sampling. An increase  $P<0.05$  in FCR, morphometric characteristics of tibia bone (weight, length, diaphysis and medullary canal diameter), muscle fascicle and fiber diameter was observed in all supplemented groups with superior results observed in groups receiving phytase+8g lysine compared with control group. Meat quality parameters including cooking loss, yellowness of meat and meat lightness was decreased  $P<0.05$  in groups receiving supplementation when compared with control group. Serum alkaline phosphatase levels, water holding capacity and pH of breast muscles at 12 hrs post slaughtering did not vary amongst groups. Based on the results we concluded that combination of lysine and phytase at dose rate of 8g and 500 units can be a useful combination for improving the growth performance and meat quality parameters in Japanese quails.

**Keywords:** *coturnix coturnix japonica*, microbial phytase, poultry, drip loss, feed conversion ratio, amino acid

## Investigation of triterpene saponins from the berries of common ivy (*Hedera helix* L.) growing in Azerbaijan

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### Abstract:

In order to search for new sources of plant raw materials for the creation of medicines containing triterpene glycosides, we studied the triterpene saponins of common ivy (*Hedera helix* L.) from the flora of Azerbaijan. The aim of the study is to develop a method for the efficient isolation of saponins from common ivy berries based on certain optimal conditions. The paper presents the results of chemical investigation of triterpene saponins (substances A, B, C and D), isolated from the berries of common ivy. Applying classical chemical methods, such as acid, alkaline, and analytical partial hydrolysis, methylation with diazomethane, complete methylation followed by methanolysis, periodate oxidation as well as IR spectroscopy and thin layer chromatography (TLC) were established that two saponins are biosides of corresponding sapogenins. The carbohydrate chain of these compounds consist of one molecule L-arabinose and L-rhamnose. It has been found that is saponin A  $C_{41}H_{66}O_{11}$  oleanolic acid 3-O-[ $\alpha$ -L-rhamnopyranosyl-(1  $\rightarrow$  2)- $\alpha$ -L-arabopiranosyd] ( $\beta$ -hederin) and saponin B  $C_{41}H_{66}O_{12}$  has the same carbohydrate chain associated with hederagenin ( $\alpha$ -hederin). Saponin C is pentaosid of oleanolic acid. The carbohydrate chain includes one molecule of L-rhamnose, D-glucose, D-galactose and two molecules of L-arabinose. On the basis of results of the experiments and their analysis found complete chemical structure of individual glycoside as oleanolic acid 3-O- $\alpha$ -L-arabinopiranozyl-(1 $\rightarrow$ 2)- $\beta$ -D-galaktopyranosyl-(1 $\rightarrow$ 2)-[ $\beta$ -D-glucopyranosyl-(1 $\rightarrow$ 4)]- $\alpha$ -L-rhamnopyranosyl-(1 $\rightarrow$ 2)- $\alpha$ -L-arabinopiranozyl. This glycoside is isolated from the berries of common ivy for the first time. For the first time, triterpene saponins from raw materials were isolated separately by a special approach - sequential fractional extraction and their physicochemical properties were studied.

**Key words:** triterpene saponins, oleanolic acid, hederagenin,  $\alpha$ -hederin,  $\beta$ -hederin.

# INVITED REVIEWS

*Invited Oral Presentation*

## Food-borne Bacterial Toxins

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### **Abstract:**

Besides foodborne diseases caused by viruses, pathogenic bacteria and their toxins are of major concern. Among the most common causative agents for food intoxications are toxins produced by *Bacillus cereus* and *Staphylococcus aureus*. Since several decades, food intoxications caused by the emetic toxin (cereulide) of *B. cereus* or staphylococcal enterotoxins (SE) are frequently reported. Both *B. cereus* and *S. aureus* produce their toxins directly in the food. Therefore, the clinical symptoms set on after a very short incubation time between less than one and a few hours. Cereulide and the SE cause primarily vomiting, which often is followed by mild, self-limiting diarrhea. Cereulide, a dodecadepsipeptide, has a molecular mass of 1.2 kDa and is chemically closely related to the potassium ionophore valinomycin. Meanwhile, several isoforms of cereulide have been described. The emetic toxin is highly lipophilic, it is resistant to heat, pH and proteolysis. PCR assays are available for the detection of emetic *B. cereus* as well as different mass spectrometric methods for detection and quantification of cereulide. In addition, information about the toxicity can be obtained by cytotoxicity assays. SE are proteins of about 27 kDa and have been named alphabetically. So far, more than 20 SE have been described, including variants which were not proved to be emetic and are referred to as SE-like (SEI). SEA–SEE are considered the "classical enterotoxins", which are all superantigens and have been shown to be emetically active in rhesus monkey feeding assays. Like cereulide, SE show high resistance to heat and proteolysis and the toxins cannot be removed or inactivated by standard procedures used in food processing. Detection of SE is done by immunoassays. Currently a major drawback is that only the classical enterotoxins can be detected by commercial assays.

**Keywords:** *Bacillus cereus*, cereulide, *Staphylococcus aureus*, enterotoxins.

*Invited Oral Presentation*

## **Antioxidant and anti-inflammatory Hydroxytyrosol (HXT) from olive leaves as a functional ingredient in meat products and with healthy benefits for human.**

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### **Abstract:**

Olive (*Olea europaea*) is one of the most extensive crops in the Mediterranean countries, and an important source of extra distinctive compounds that has been widely tested due to its known health benefits. Olive derivatives, such as extra virgin olive oil (EVOO) and olive leaves are rich in antioxidant compounds such as hydroxytyrosol (HXT) and oleuropein and oleic acid, as main monounsaturated fatty acid. Because of HXT molecular structure, its regular consumption reports important beneficial properties such as anti-inflammatory, antimicrobial, antioxidant, and anticancer. As a matter of fact, its antioxidant and antimicrobial effects made this compound a good preservative agent against meat deterioration and spoilage, capable of replacing some synthetic additives whose continued and regular consumption may negatively affect the human health. On the contrary side, this extract has an unpleasant odor and flavor, so a synthetic source of HXT could also be used to improve the sensory quality of the meat products. There are some examples of the application of HXT to meat products, and particularly, our research group has recently developed different meat products exogenously enriched in HXT, as main antioxidant compound obtained from olive leaves. For instance, chicken nuggets with 750 ppm HXT from olive leaf presented a reduction of the microbial growth, a better oxidative stability, and a good sensory quality for 12 months at  $-18\text{ }^{\circ}\text{C}$ . In addition, in a pioneering way, we have compared the action in meat derivatives of this derivative of the olive tree, as a natural source of HXT, against HXT synthetically obtained. Beneficial effects of olive and HXT consumption have been extensively studied due to its antioxidant, antimicrobial, and anti-inflammatory power. For this reason, in last 20 years, researchers have focused on the reduction and the removal of preservatives and dyes by olive derivatives and HXT incorporation to achieve “clean label” meat products. Unfortunately, HXT from olive leaf cannot be directly incorporated to manufactured meat products, since its characteristic flavor has been palatably unaccepted, as it has been described above. Therefore, it can be concluded that this incorporation can be reached by synthetic sources of HXT, as an ingredient in their formula, throughout its application in new systems of packaging or by encapsulation, are valid to obtain its health benefits and antioxidant properties on meat. Consequently, a great opportunity exists for meat products processors to use natural antioxidants, such as HXT, to replace synthetic additives while maintaining product quality.

**Keywords:** Antioxidant, Hydroxytyrosol (HXT), olive leaves

*Invited Oral Presentation*

## **Multi-class, Multi-residue LC-MS/MS Method For Veterinary Drug Residues, Mycotoxins And Pesticide In Urine**

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### **Abstract:**

In this work, an liquid chromatography- tandem mass spectrometry (LC-MS/MS) methodology is proposed for the multi-class multi-residue screening of veterinary drugs, pesticides and mycotoxins in bovine urine, using an LS-MS/MS both in positive and negative mode. The method currently covers 72 analytes belonging to different families such as antibiotics, steroid hormones,  $\beta$ -agonists, lactones, thyreostatics and contaminants such as pesticides and mycotoxins. After comparing different sample preparation procedures, extraction with sodium acetate and phosphate buffer followed by enzymatic hydrolyze with  $\beta$ -glucuronidase and solid phase extraction with OASIS cartridges was selected as the most appropriate methodology. In the validation study were included linearity, limit of detection, limit of quantification, decision limit, detection capability, accuracy and precision of the method. The method was linear with  $R^2 > 0.99$ . The limit of quantification were established between 0.19  $\mu\text{g/l}$  and 16.7  $\mu\text{g/l}$ , demonstrating the usefulness of LC-MS/MS as an ideal tool for compliance monitoring in regulatory laboratories. The results for accuracy, expressed as recovery, were with values from 65 – 115%. Intra-day precision (repeatability) and inter-day precision (reproducibility) were expressed through coefficient of variation. The CV was from 1.26 to 23.31 % for intra-day precision and from 2.29 to 29.42 % for inter-day precision. The results for accuracy and precision fulfill the criteria prescribed in the Commission Decision 2002/657/EC. The method was successfully applied for routine analysis of bovine urine samples. The routine analysis showed that the target components were not detected in the bovine urine samples.

**Keywords:** veterinary drug residues, pesticide residues, mycotoxins, bovine urine, validation study, LC-MS/MS

*Invited Oral Presentation*

## **Diagnostic Approach to SARS-CoV-2 Infection; What has Changed? What is the Place of Radiology?**

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### **Abstract:**

The diagnostic tools of Covid-19 are direct diagnostic methods, serological diagnostic tests, biochemical and hematological parameters and radiology. Laboratory methods are also depending on the symptom period. Before symptom onset, the detection is unlikely; after symptom onset, PCR is likely positive and antibody detection is possible afterwards. Virus isolation is not recommended for diagnosis, just required in biosafety level III laboratories. Virus isolation is recommended in antiviral investigate, research on pathogenesis, antibody studies and vaccine development. Gold standard is nucleic acid amplification test; nevertheless real time reverse transcription polymerase chain reaction (RT-PCR) is most widely used. It is not recommended to measure antibodies before and after vaccination in public vaccinations. Diagnostic imaging tools should applied for pulmonary complications. The imaging tools are based on chest X-ray and Computed Tomography (CT). Most patients with Covid-19 do not develop pneumonia. Imaging methods are not a diagnostic method in this disease, but an aid in diagnosis. Usually, X-ray is the first step imaging modality, but CT is very useful in clinical incompatible patients; but radiation risk must be taken into account. Small ground glass areas are seen on CT in early periods and usually not reflected in the chest X-ray and are unlikely to be seen. In the early stages, the sensitivity of chest radiography is low but useful in portable studies especially in reanimation units and also in follow-up studies. In the later stages, especially in the periods when consolidations develop, findings begin to be seen on the chest X-ray. Radiologic findings are more prominent in X-ray with moderate and severe clinical findings. CT has high sensitivity, and plays an important role in early diagnosis in patients with high clinical suspicion and false negative RT-PCR test. RT-PCR is the standard, reference diagnostic method. CT should not be used as a routine imaging method, widespread and indiscriminate use of CT for unscientific reasons should be avoided. Molecular diagnostic methods are easily accessible, can give rapid results, and it is clear that there will be less need for imaging as their accuracy is high.

**Keywords:** covid-19; diagnosis; CT scan; RT-PCR; chest X-ray.

*Invited Oral Presentation*

## Potential Role of Propolis in Relief Toothache

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### **Abstract:**

Dental pulp is elegantly confined within enamel and dentin. However it was become inflamed due to cariogenic bacteria results toothache. Toothache or odontalgia as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. Propolis is a natural product derived from plant resins collected by honeybees. The major component of propolis is flavonoids and caffeic acid phenethyl ester (CAPE) which is a biologically active compound. These substances were known has anti-inflammatory and anti-oxidant properties Therefore, the purpose of this review is to highlights the potential role of propolis in relief toothache caused by dental pulp inflammation. This review complied data from our study as well as from other researchers, focusing on molecular mechanism of inflammation, dental pain mechanism caused by inflammation and the role of propolis on inflammatory process. Both *in vitro* and *in vivo* or even clinical research revealed that propolis has anti-inflammatory. Propolis could suppress cyclooxygenase (COX) and lipoxygenase (LOX) enzymes during inflammation. COX-2 is mainly inhibited by flavonoid which suppresses prostaglandin endoperoxide synthase at high concentration depending on the hydrophilicity and structure. The other important component of propolis is the caffeic acid (3,4-dihydroxycinnamic acid) phenethyl ester (CAPE). It also has anti-inflammatory by inhibits LOX and COX enzymes that are involved in the AA metabolism pathways. It could be concluded that propolis effective to relief toothache.

**Keywords :** Propolis, Toothache, Inflammation, Dental pulp.

*Invited Oral Presentation*

## **Effect of curing agents and cooking on biologically active polyamines level in turkey meat**

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### **Abstract**

Polyamines mainly putrescine, spermidine, and spermine are biological compounds that exist naturally in meat, fish, wine, and beer. These compounds play important roles in causing some diseases such as tumor and cancer cell growth. This study was aimed to assess the effects of curing agents (salt, sodium nitrite, sodium polyphosphate, and ascorbic acid), and cooking (frying and boiling) on polyamine contents in turkey breast meat by the aid of Response Surface Methodology based on Central Composite Design (RSM-CCD). Responses of 60 runs were analyzed after subjecting to dispersive liquid-liquid microextraction (DLLME) and determination changes in analytes by the aid of a high-performance liquid chromatography equipped with an ultraviolet detector (HPLC-UV). According to findings, salt, sodium nitrite, and sodium polyphosphate can reduce putrescine and spermine content significantly. Moreover, ascorbic acid showed a slight increase in the concentration of polyamine while no significant linear effects were associated with the thermal processes. NaCl and sodium nitrite and sodium polyphosphate are strong agents in decreasing polyamines levels, meanwhile cooking methods were not as powerful as the curing process in polyamine reduction.

**Keywords:** polyamines; curing agents; heat thermal; turkey breast meat; RSM

*Invited Oral Presentation*

## **Nucleic Acid Therapeutics**

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### **Abstract:**

Nucleic acid-based therapeutics as a new category of biologics is still in its early stages. These drugs are used in the treatment of a wide range of diseases, such as cancer, cystic fibrosis, heart disease, diabetes, hemophilia, neuromuscular diseases, inherited blindness and AIDS. With exogenous nucleic acids, highly specific, durable and possibly curative therapeutic effects are achieved in inherited and acquired disorders. Nucleic acid therapeutics can achieve long-lasting or even curative effects via gene inhibition, addition, replacement or editing. It is possible to create a drug simply by changing the nucleotide sequence of the target gene, thus, rapid and efficient drug development can be expected. However, employing nucleic acids as therapeutics is challenging because they are susceptible to degradation by nucleases, contribute to immune activation and have unfavourable physicochemical characteristics that prevent facile transmission into cells. Accelerating the rate of cellular uptake, intracellular trafficking and endosomal escape has been a driving force behind advances in many chemical modifications and delivery agents. Their clinical translation, depends on delivery technologies that improve stability, facilitate cellular internalization and increase target affinity. Nucleic acid drugs have been classified into five categories according to the manner in which they act on target genes; Inhibition type (antisense oligonucleotides, siRNA), augmentation type (small activating RNA), replacement type (mRNA, miRNA Mimics), splice switching type (single-stranded DNA) and editing type. Messenger RNAs (mRNAs) present a great potential as therapeutics for the treatment and prevention of a wide range of human pathologies, allowing for protein replacement, vaccination, cancer immunotherapy, and genomic engineering. A wide variety of delivery approaches improve the transport and bioavailability of oligonucleotides. These include (i) direct conjugation to carriers and (ii) incorporation into nanoparticulate carriers. A carrier molecule called vector carries the therapeutic gene to patient's target cells. Vectors generally used are viral and non-viral systems. Viral vectors are evolved by genetic modification of retroviruses, adenovirus, adeno-associated virus & Herpes simplex virus. Non-viral delivery system has some advantages over viral systems. Non-viral are simple and safer alternative for the viral systems and low host immunogenicity (cationic lipids and polymers, peptides and nanoparticles). There are 4 physical methods by which can enhance nucleic acids delivery they are: electroporation, gene Gun, sonoporation and magnetofection. Nucleic acid-marketed products are based on both in vivo and ex vivo strategies. Apart from DNA-based therapies, antisense oligonucleotides, small interfering RNA, and, recently, T-cell-based therapies have been also marketed. As of January 2020, only ten oligonucleotide drugs have received regulatory approval from the FDA. Numerous recent, high-profile regulatory approvals have demonstrated that oligonucleotide drug delivery has now matured to the position of clinical utility for multiple diverse indications.

*Invited Oral Presentation*

## ***Lemna minor L* - oxidative stress modulator and pulmonary antioxidant against progressive Bleomycin-induced inflammations**

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### **Abstract:**

Bleomycin (BLM) administration is associated with multifunctional proteins inflammations. BLM exerts its cytotoxic effect *in vivo* by cleaving the DNA structure in a biochemical process dependent on the presence of two cofactors - the molecular oxygen presence and the presence of metallic Fe (II) ion. Activated BLM conjugates both DNA and Fe (II). Oxidative degradation by molecular oxygen as a next step, converts Fe (II) to Fe (III) and generates DNA-cleaving reactive oxygen and nitrogen species (ROS/ RNS), breaks the DNA chain and leads to cell death. BLM-induced ROS and RNS decreased antioxidant status and dramatically increase fibroproliferation and extracellular matrix deposition. Plant protection systems are equipped with both enzymatic and non-enzymatic mechanisms to deal with ROS/RNS overproduction and tolerance to toxic stress. *Lemna minor L* (LME) extract, a free-floating monocot macrophyte possesses antioxidant and anti-inflammatory potential. Also, *LME* was characterizes as an anti-inflammatory antioxidant capable of ROS neutralizing after administration in acute and chronic airway inflammation and autoimmune disorders. The aim of the study was to examine the protective effect of *LME* as lung protein antioxidant and oxidative stress modulator on BLM-induced inflammations in Balb/c mice. For this purpose, the protein carbonyl content, advanced glycation end product, nitroxide protein oxidation (5-MSL), and lipid peroxidation (as MDA and ROS), in lung cells were examined. The histological examinations, collagen deposition, and quantitative measurements of IL-1 $\beta$ , IL-6, and TNF in lung tissues and blood were investigated. Intraperitoneal, BLM administration (0.069 U/mL; 0.29U/kg b.w.) for 33 days, caused inflammations and IPF induction in Balb/c mice. Pulmonary combining therapy was with *LME* at dose 250 mg/ml (0.382 mg/kg.b.w.). *LME* histologically ameliorated BLM-induced inflammations in lung tissues. *LME* significantly modulated ( $p<0.05$ ) BLM-alterations induced in lung hydroxyproline, carbonylated proteins, 5-MSL-protein oxidation. *LME* daily inclusion significantly reduced the metachromatic mast cells density, especially in the interalveolar septa and large bronchial wall, with *BLM+LME* values close to controls. Oxidative stress (OS) decreased levels in antioxidant enzymatic and non-enzymatic systems in the lung were significantly regulated ( $p<0.001$ ) by *LME* minor decreased the IL-1 $\beta$ , IL-6, and TNF- $\alpha$  expression in lung tissues and plasma. Our study suggests that aqueous *LME* extract, due to the high active proteins and amino acids content in its structure stimulates antigen-specific immune response, which restores protein oxidation and determines inflammations and cell-mediated cytotoxicity. The *LME* improves the preventive effect/ defense response in specific pulmonary protein oxidation, lipid peroxidation, ROS identifications, and cytokine modulation by BLM-induced chronic inflammations, and could be a good antioxidant, anti-inflammatory, and anti-fibrotic alternative or inflammations/ IPF prevention involved in their pathogenesis.

**Keywords:** BLM; IPF; LME; Protein carbonylation; OS; antioxidant enzymatic/ non-enzymatic system system; inflammations

**Acknowledgments:** This study was supported by scientific projects 2/2020 of Medical Faculty, Trakia University, Stara Zagora, 6000 Bulgaria.

*Invited Oral Presentation*

## **Role of Glycation in Various Metabolic Disorders**

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### **Abstract**

Non-enzymatic protein glycosylation is the addition of free carbonyls to the free amino groups of proteins, amino acids, lipoproteins and nucleic acids resulting in the formation of early glycation products. The early glycation products are also known as Maillard reaction which undergoes dehydration, cyclization and rearrangement to form advanced glycation end-products (AGEs). By and large the researchers in the past have also established that glycation and the AGEs are responsible for most type of metabolic disorders, including diabetes mellitus, cancer, neurological disorders and aging. The amassing of AGEs in the tissues of cancer and neurological disease shows its involvement in various metabolic disorder. Therefore, it is likely that inhibition of glycation reaction may extend the lifespan of an individual. The hunt for inhibitors of glycation, mainly using in vitro models, has identified natural compounds able to prevent glycation, especially polyphenols and other natural antioxidants. Extrapolation of results of in vitro studies on the in vivo situation is not straightforward due to differences in the conditions and mechanism of glycation, and bioavailability problems. Nevertheless, existing data allow postulating that enrichment of diet in natural anti-glycating agents may attenuate glycation and, in consequence may halt the aging, diabetes, cancer and neurological problems.

**Keywords:** Glycation, Advanced glycation end-products (AGEs), Diabetes, Cancer, Metabolic Disorders, Anti-glycation.

## **Correct Production Techniques in Honey Bee Venom and Distinguishing Properties of Anatolian Honey Bee Venom**

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### **Abstract**

Honey bee venom is a toxin produced by honey bees to defend their colonies. The composition of the venom may vary according to many external and internal factors such as the type of bee species, region, feeding, harvesting techniques etc. In the present study, it was aimed to investigate the correct production techniques effected the composition of the bee venom and also to determine the standards of Anatolian honey bee venom contents. For this purpose, a total of 100 samples were obtained and analyzed by HPLC from 23 cities in 7 geographical regions of Turkey. All samples were collected randomly from beekeepers in 23 city of Turkey. The results demonstrated that no statistically significant differences in the amounts of analyzed components depending on harvesting time, collection site on the beehives, or season. On the other hand, improper practices during harvesting and storing was the most critical parameters determining the quality of HBV. Although the significant differences were observed between regions in terms of PLA2 and melittin contents of Anatolian bee venom, no significant difference was observed for apamin compound. The average amount of apamin (%1,90) and melittin (%47,87) in Anatolian honey bee venom were found between the limits of the standards of Turkish Standardization Institute (TSE). Whereas the PLA2 value (%16,13) was found above the general average value of TSE (%10-12). Additionally, the highest PLA2 value of all literature on honey bee venom was detected in the present study as; %31,09. According to the highest and lowest PLA2 values (16,13%-31,09%) of the present study, TSE standards should be revised for PLA2 values of Anatolian honey bee venom.

**Keywords:** Anatolian honey bee venom, Chemical composition, Standards, harvesting techniques

## **Introduction To Pediatric Surgery**

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### **Abstract;**

Pediatric Surgery is responsible for the treatment and prevention of surgical conditions in fetus 28 weeks of gestation to adolescent at puberty. Establishment of pediatric surgery is aboard end of 1940s. Specialties of pediatric surgery are; general surgery, neonate surgery, orthopedics, urology, thoracic surgery, cardiac surgery, oncology and neurosurgery, Common Congenital Abnormalities are; Defects in the abdominal wall (diaphragmatic hernia, gastroschisis, omphalocele), Neurological system (brain, spinal cord, etc.), Cardiovascular and pulmonary abnormality, Malformation of digestive system, Malformation of urological and reproductive system, Limbs and vertebra abnormality, Congenital Posterolateral Diaphragmatic Hernia (CDH), Congenital Esophageal Atresia Tracheoesophageal Fistula, Hypertrophic Pyloric Stenosis, Intestinal Obstruction in the Neonate, Intestinal Atresia and Stenosis, Congenital Malrotation of Intestine, Malrotation, Hirschsprungs Disease, Anorectal Malformations (ARMs) and Hydronephrosis (Ureteropelvic junction obstruction). Inguinal Hernias are the most common diseases seen at the pediatric surgery clinics. Incidence of Inguinal Hernias is 0.8% - 4.4%. Prematures have higher incidence 16-25%. 30% of them were seen before age 6 months. M:F 3.1, there is no sex predilection among prematures. 60% are right sided, 30% left sided, and 10% bilateral. Family history is 11.5%. Inguinal Hernias clinical features are Intermittent bulge on the groin, labia or scrotum. It appears especially during the increased intraabdominal pressure. Usually it is asymptomatic. Older children complain about groin and inguinal discomfort during exercise. Incarceration is the entrapment of bowel at the level of internal ring. This can cause intermittent pain and irritability. Bowel obstruction occurs and distention, vomiting and obstipations are seen at the age of 5 years old. In the clinic we place the baby supine position and undressed in the warm room. Put the testes in the scrotum by the help of fingers and palpate the inguinal canal. In Older children can perform a Valsalva maneuver. Spermatic cord can be palpated to determine the thickening (silk string sign). To palpate the spermatic cord lay a finger on the pubic tubercle. Also examiner can feel the sensation of a plastic bag with few drops of water in it (plastic baggie sign). If the examiner could not detect a hernia sac on palpation, a good history from the parents or the previously examination of another physician is appropriate for the surgical treatment. Diagnosis of Inguinal Hernias is based on examination and history. In the past herniography was performed by injecting a water soluble contrast material into peritoneal cavity via infraumbilical fluoroscopic-guided injection. Plain radiographs are taken at 5, 10 and 45 minutes. This technique helps to detect contralateral hernia, postoperative recurrent hernias. Complications of this technique include intestinal perforation, intramural intestinal hematoma and allergic reactions to contrast agents. US, accuracy of 94%, upper limit of inguinal canal is 4 mm. Diameter of inguinal canal more than 4.9 mm shows a patent PV and more than 7.2 mm is associated with true hernia. Inguinal Hernias never resolve spontaneously and surgical closure is always indicated. Repair should be done expeditiously, because of herniation. If the repair is done in the first month after diagnosis, complication can be avoided in 90% of cases. Anesthesia; local, regional and general. Regional anesthesia is as safe as general anesthesia. Caudal block can be used for postoperative analgesia. Repair can be recommended soon after diagnosis. Some recommend time of repair before discharge from the hospital for the premature babies, if they become 2 kg. Early surgery in premature infants are associated with recurrence. Inguinal Hernias repair technique in males is high ligation of the sac. Mitchell-Bank repair is the high ligation of

the sac via internal ring without opening the external oblique. Ferguson repair; external oblique is opened and reconstruction was performed without altering the relationship between spermatic cord to the inguinal canal. Inguinal Hernias repair technique in females is simpler than males because there is no need to identify and preserve a spermatic cord. Ovary, tube or mesosalphenx is usually in the sac. If there is no content in the sac, it should be divided and double ligated at the level of internal ring. The sac is not routinely attached to the conjoint tendon to reestablishment the normal support for the uterus (Bastionelli maneuver). Inguinal hernias repair technique laparoscopic procedure has some advantages. These are less pain, earlier return to work, repair of bilateral hernia through the same port, easier repair in recurrent hernias. And also it has Disadvantages: These are increased cost, longer operating time, prolonged learning curve. However, recurrence rates are much more. Usually laparoscopic repair is not used in males but the technique 'Laparoscopic Inversion Ligation' can be used in females.

*Invited Oral Presentation*

## **Infections with coronaviruses in wildlife animals**

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Infections with coronaviruses are common in various species of domestic and wild animals. The course of these infections is very different, both in clinical forms and in severity. In addition, their epidemiology is extremely complex, including many species of natural reservoir animals of the virus, especially wild animals, but also domesticated animals, used for work or used for food or traditional Asian medicine. Coronaviruses affecting domestic animals also affect wild animals with similar clinical evolution. In recent years, in fact since 2002, with the appearance of the first cases of SARS CoV in China, continuing with 2012 (MERS) and more recently 2019 SARS CoV-2, the attention of the medical world has focused on understanding the role those wild animals have in transmitting coronaviruses to humans, in animals, in general, being able to speak of predominantly interspecies transmission. The research carried out has shown that in many cases it is an anthroponosis, humans are the source of infection for wild animals, especially in the case of zoo parks or mink farms. Natural infections have been described both in domestic pets (dogs, cats, ferrets), but also in wild animals (tigers, lions, puma, snow leopard, gorillas) in gardens or zoo parks, or in American mink farms. All these cases of infections were produced as a result of the transmission of the virus from humans. Infections have also been described in wild cats, although no connection could be made between their living environment and their contact with humans. Direct contact with infected animals is not necessary for the transmission of SARS-CoV-2, studies carried out in this regard have demonstrated the potential of the coronavirus to retain its infectivity for several hours on surfaces and in human feces. Recent studies have considered the possibility of contaminating the aquatic system with feces from infected humans that can be a source of infection for wild mammals such as raccoons, bats, marine mammals, such as whales or seals. The choice of surveillance approach should be strongly influenced by the main purpose, which may be early detection of infection, demonstration of the absence of infection, or mapping of infection distribution. In many countries, there are no general surveillance programs for wildlife. Wildlife surveillance should also be integrated with broader public and animal health strategies to provide information to understand how the virus is transmitted between humans to animals.

**Keywords:** coronaviruses, wildlife animals, anthroponosis

*Invited Oral Presentation*

## **Vitamins, Supplements and Nutrition in Pregnancy**

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### **Abstract:**

Inadequate and unbalanced nutrition before and during pregnancy brings many health problems that lead to maternal and infant deaths. There is a close relationship between the diet during pregnancy and the baby's birth weight, brain development and health. 58% of pregnant women have iron deficiency anemia which is necessary for the production of blood cells. Some pregnant have folic acid and iodine deficiencies, which are effective in physical and mental development, and calcium deficiencies, which play a role in bone development. 400 microgram/day folic acid should be taken one month before conception and be continued till 12<sup>th</sup> week of gestation to reduce neural tube defects. 27 mg/day iron supplementation is needed for healthy pregnant and 60 mg/day additional iron supplementation is needed for pregnant with anemia. Calorie needs increase 4.5 % in the first trimester and 24 % in the last trimester, thus pregnant needs an additional 350-400 kcal/day during the last trimester. Vitamin D supplementation is required as 600 IU/day. Routine calcium and magnesium supplements are not required; but if there is a risk of preeclampsia, calcium supplementation for prevention is 1000 mg/day. Omega 3 has anti-inflammatory effects and has benefits to fetus like visual and cognitive development. Recommendation for omega-3 is 200 mg/day of docosahexaenoic acid form.

**Keywords:** folic acid, iron supplements, nutrition, pregnancy, vitamin D.

*Invited Oral Presentation*

## Standards of Hippotherapy Team

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### **Abstract:**

One Health is defined by antibiotic-resistant germs, Vector-borne diseases, Diseases in food animals, Contamination of water and Human-animal bond. Hippotherapy is horse assisted therapy for human-animal bond. Hippotherapy is an evidence-based therapy approach implemented by health professionals in which the horse is involved in the process, aimed at improving the neuromotor, sensory, cognitive and psychosocial functions of the client. Our project aims to create network for Sustainable Hippotherapy system. Hippotherapy system need Standards about Hippotherapy team, Hippotherapy terminology, Hippotherapy guides for horse training, Hippotherapy guides for horse health certificate, Hippotherapy interventions guide for Therapists. The Project duration is 46-month and accepted by the European Union Delegation to Turkey, linked with European Commission under the scope of "Right to Health". The project consists of 14 business packages to be carried out in cooperation with national and international partners. In our project, it is aimed to create a hippotherapy network at both national and international levels. According to our studies, each country has different governmental and non-governmental procedures and supporting/financial systems. So, we have been working on creating sustainable system for Hippotherapy. We created a pilot model based on local network studies which was created in the first stage. We are organized 3 research studies; First one organized with 8 mental disorders kids, Second one 14 Doctors who have responsible for Covid 19 clinics, Third one Cerebral palsy groups (10 CP kids Hippotherapy/ 10 CP control groups). An official protocol has been signed between the institutions that will have been the basic building block of a sustainable mechanism for this model (university, provincial health directorate, provincial directorate of national education, veterinary association, regional forestry directorate), and has been being implemented with the first Ministry of Health approved case studies in Turkey. Within the scope of the protocol, we aim to create standards of hippotherapy team that takes part in hippotherapy sessions. Within the project, Hippotherapy network will be constructed by participation of key actors from Civil Society organizations that are potential hippotherapy practitioners with their specific field just as neurologists, speech-language therapists, physiotherapists, occupational therapists, brain surgeons, orthopedists, veterinarians, horse trainers, special needs teachers, volunteers, handicapped people and their families. By this way, Hippotherapy implementation will acquire certain standards, documentation, and certification by the Hippotherapy Network. So, we believe that the standards of Hippotherapy team will contribute to Hippotherapy researches and collaborations. Sustainable hippotherapy system need to strong legal communication between Ministry of Health and Agriculture and Forest. One-health policy and final beneficiaries suffering from head trauma, brain hemorrhage, lordosis, cerebral palsy, multiple sclerosis, neuromusculoskeletal function loss, down syndrome, autism, functional loss in sensory nerves, impaired vision, hearing, and speech, cognitive disorders, limbic system disorders concerning motivation and concentration, impairment of such nervous system related skills as sitting, psychological disorders.

**Keywords:** Hippotherapy standards, team, one health.

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*Invited Oral Presentation*

## **Sugar toxicity and its consequences: Hyperglycaemia and Diabetes**

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### **Abstract:**

Sugars play very important role in the body as a source of energy and precursors for other metabolic pathways. Human body has a mechanism to regulate the level of sugar in the circulation and tissues. High level of glucose in the body leads to a condition known as hyperglycemia which further develops into Diabetes. The toxic level of glucose, glucotoxicity, causes several pathophysiological conditions like Alzheimer's, Parkinson's, cataract, Diabetes etc. These conditions are the consequence of increased accumulation of advanced glycation end products (AGEs), formed by the interaction between the carbonyl group of sugars and amino groups of proteins and nucleic acids. AGEs induce structural alterations through several mechanisms like aggregation, cross-linking, and adduct formation thus causing functional loss of biomolecules. The effect of AGEs is observed more during the hyperglycemia, Diabetes and its secondary complications.

**Keywords:** Advanced glycation end products, Diabetes, Glucotoxicity, Hyperglycemia, Protein glycation

*Invited Oral Presentation*

## **Biorefinery Integrated In Circular Economy**

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### **Abstract:**

Biorefinery concept developed by BUASVM Timișoara aims to develop a complete cascading process and value chain enabling the use of marginal lands to produce "green chemical" crops and at the same time serve as a means of rehabilitation of marginal lands. The refinery process is focused to cover with crops polluted soils or marginal lands unfit for food and feed production to deliver carbohydrates as feedstock for green building block chemicals, biofuels. By anaerobic digestion of biorefinery organic residues and by-products, the circular bioeconomy approach will return the rest of the matter as fertilizer to improve soil quality. By applying this circular biorefinery, the contaminants (e.g. heavy metals) will be extracted from soil (for safe reuse in metal industry), rehabilitating the land to sustainably deliver resources in a circular bioeconomy. BUAS team will develop the biorefinery from currently pilot stage to prototype, which is foreseen to be transferred and adapted in several areas improper for food/feed production due to contamination of human industrial activity. This concept will provide natural and renewable carbon and energy resources for green chemicals&biofuels manufacturing, mitigating GHG emissions, promoting the biodiversity in marginal lands and reversing climate change. BUAS Timișoara engage international partner with expertise in sectors such as: agriculture, pedology, chemical engineering, industrial biotechnology, technical engineering, biology, economy, law, communication and administration for development of the circular bioremediating biorefinery concept. Biorefinery will focus on delivering renewable energy through biogas technology as the final link in the circular approach, improving the stability and flexibility of energy grid by filling the gaps caused by unstable renewable sources of energy such as photovoltaic and wind energy. Biogas technology is very important not only in energy sectors, as a system able to provide electricity and thermal energy, but the importance of digestate is emphasized as fertilizer and soil improver. Analyzing the state of different energy systems and periods of peak deficit, biogas technology will contribute in providing electricity and thermal energy in periods when other technologies are faced with periods of low efficiency. Specific outcome of BUAS concept is decentralization of energy production and involvement of small communities, marginal lands in supporting the balancing of the power grid, increasing the flexibility of the energy system and consolidation of energy security.

## THE EFFECT OF POST-RADIATION TREATMENT ON ANTIOXIDANT AND RADICAL SCAVENGING QUALITY OF PURSLANE (*PORTULACA OLERACEA* L.) AND ROSEHIP (*ROSA CANINA*) DURING STORAGE

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### Abstract

Purslane (*Portulaca oleraceae*) and rose-hip (*Rosa canina*) is a widespread weed, which is highly appreciated for its nutritional value with particular reference to the content in omega-3 fatty acids and vitamins. Purslane is a weed belonging to the *Portulacaceae* family and a basic Mediterranean diet component. Moreover, phenolic compounds and containing of  $\alpha$ -linolenic acid; minerals- calcium, potassium, phosphorus; proteins and carbohydrates; tocopherols, carotenoids, and ascorbic acid in purslane leaves extracts have been attributed with antioxidant properties (1). In particular, rosehip, *Rosa canina* extracts, is well-known for their excellent antioxidant, antibacterial, antifungal, and DNA cleavage activities, contain active compounds such as ascorbic acid, carotenoids, phenolic compounds (phenolic acids; flavonoids like proanthocyanidin), polyunsaturated fatty acids, and phospholipids (2). Both, *P. oleraceae* and *R. canina* extracts are tolerant to stressful conditions, such as heat, drought, salinity stress, and gamma radiation (10 kGy). Gamma irradiation (10 kGy) is an effective method of processing and preserving foods and has played a pivotal role in achieving the maximum hygienization of processed foods for commercial applications. In the present study, a comparative study on the antioxidant activity of two plant species belonging to the Bulgarian flora - *Portulaca oleracea* and *Rosa canina* on the free radicals DPPH (2,2-diphenyl-1-picrylhydrazyl) and TEMPOL (4-hydroxy-2, 2,6,6-tetramethyl-1-piperidinyloxy-1-oxyl) by electron paramagnetic resonance (EPR), and acting on the antioxidant activity and hydroxyl radical ( $\bullet$ OH) scavenging by the Fenton reaction. The results show that the *P. oleracea* and *R. canina* extracts subjected to 10 kGy radiation show stable antioxidant activity, even after 12 months storage. The DPPH results calculated as 56.02% *P. oleracea* and 59.8% *R. canina* antioxidant activity. The TEMPOL results calculated as 42.3%  $\bullet$ OH- *P. oleracea* and 50.14%  $\bullet$ OH- *R. canina* scavenging activity. In addition, 10 kGy irradiated extracts exhibited 2 times higher sod-like and cat-like activity versus standard. The present investigation demonstrated that post-radiation antioxidant activity of *P. oleracea* and *R. canina* is a promising method for enhancing nutrition and maintaining the storage quality, that saves antioxidant potential, particularly the hydroxyl radical scavenging activity. Radiation treatment at 10 kGy doses proved significantly ( $p \leq 0.0005$ ) beneficial in maintaining higher levels of antioxidants, texture, color attributes, especially during twelve months storage.

Key words: *P. oleracea*, *R. canina*, radiation, storage

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*Invited Oral Presentation*

## **The pregnancy-associated glycoproteins: biochemical and physiological aspects**

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### Abstract:

Embryonic development and survival during the early stages of gestation are dependent on intimate embryo-maternal communication. Embryonic development and survival at early stages of gestation are dependent on intimate embryo-maternal communication releasing many signals of various chemical natures (steroids, prostaglandins, peptides, proteins). The first publications on pregnancy specific proteins (or associated) were described in the 1980s, under various names (PSPB, PSP-60, PAG). The existence of pregnancy associated proteins and belonging to the group of aspartic proteases appears common to different species of ruminants. Pregnancy specific or associated proteins were first proposed for the diagnosis of pregnancy in cattle, and later, in many species of ruminants. It was shown that these proteins were present in maternal blood and that their RIA assay could allow early pregnancy diagnosis as well as early or late embryo mortality study. PAG assay can be performed for the diagnosis of a new pregnancy, provided that the calving-insemination interval is greater than 70 days. The period required for PAG to become undetectable in the maternal circulation appears to be due to a long half-life of this glycoprotein ranging from 7.3 to 8.4 days. In addition, the PAG assay allows a follow-up throughout gestation that can reveal trophoblast dysfunctions in embryo or fetal lead to embryonic death or abortion.