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Dear Scientist,

The thirth International Congress on Advances in Bioscience & Biotechnology (icabb) was organized in Kiev, Ukraine. We are very happy for organizing this congress in such a beautiful city and country that we have strong historical ties.

We wanted to make this conference little bit special by bringing scientist together from different disciplines of veterinary area and also to open new research and cooperation fields for them. In this sense, we desired to bring the distinguished scientist together to get know each other and to develop and implement new joint projects.

The scientist joined the congress was from different country and mostly from Turkey. Total over the two hundered scientist were registered in the congress. The total number of submission were 73 and after a careful evaluation 58 submissions were accepted by our scientific committee and 6 of them were accepted as poster presentation and, 52 of them were accepted as oral presentation and all those presentation was taken place in the conference booklet.

We would like to send our special thanks to Mr. Musa Köse and Mr. İsmet Uzun, ZENITH Group workers for their special efforts. And finally the most importantly I would like to thank to all the participants individually who came from far away to join this conference.

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Chairman: Assoc. Prof. Dr. İlker Çamkerten

Biotechnology: Where has it come from and where does it intend to go further

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Biotechnology is an umbrella term that is not easy to make a clear definition. The main reason for this is that biotechnology includes many different disciplines and fields of application such as molecular biology, physiology, biochemistry, microbiology, molecular genetics and basic engineering and computer sciences. A relatively comprehensive definition can be defined as “any technological application that uses biological systems to produce a new product or process or to modify or improve an existing product or process for a particular use or purpose”. Therefore, it is possible to say that biotechnological applications have the potential to address almost all areas of life. As a matter of fact, biotechnology is used in health, food, agriculture, environment, defense, mining and so on. There are an increasing number of current practice examples in many different areas. Thus, biotechnology has already become a global industry. There are many companies operating in the field of biotechnology in the world and their number is increasing rapidly. The biotechnology industry, particularly in health, agriculture and the environment, has become an important driving force in the economic growth of developed countries such as the USA, EU countries, Canada, Japan and Australia, and developing countries such as South Korea, Israel, India and China. The United States is the global leader in the biotechnology sector.

Keywords: Biotechnology, application areas, past, present, future

Cadmium (cd) applications in the species of water mites (Acari, hydrachnidia) and determination of antioxidant enzyme activities

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The water mite (Acari, Hydrachnidia) are the dominant and widespread groups in the lake and river systems. These organisms are used as biological indicator organisms in the determination of clean water ecosystems. Heavy metals are the most important source of inorganic pollution in water. Even the presence of many heavy metal salts in very low concentrations in inland waters shows lethal effects on aquatic organisms. Oxidative stress biomarkers, especially antioxidant enzymes, are used as indicators of pollution in water.

In this study, 4 aquariums were prepared for control group and Cadmium (Cd) metal with different concentration (1x10-5, 1x10-4, 1x10-3). Water mite species (Acari, Hydrachnidia) were placed in an equal number of aquariums and exposed to Cd for 96 hours. The heavy metal levels in the water tick and water were determined by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectroscopy ICP-OES; Spectro Genesis, Germany). In addition, antioxidant enzyme activities were determined from water mite samples in each aquarium. Significant data were obtained as a result of statistical evaluations.

Keywords: Water mite, Antioxidant enzyme, Heavy metal, Cadminium

Acknowledgements: This study is supported by TUBITAK.

Lead (pb) applications in the species of water mites (acari, hydrachnidia) and determination of enzyme activities

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The water mites (Acari, Hydrachnidia) are the most important invertebrate groups in the inner waters. These organisms are used as biological indicator organisms in the determination of clean water ecosystems. Heavy metals are the most important source of inorganic pollution in water. Even the presence of many heavy metal salts in very low concentrations in inland waters shows lethal effects on aquatic organisms. Oxidative stress biomarkers, especially antioxidant enzymes, are used as indicators of pollution in water.

In this study, 4 aquariums were prepared for control group and Lead (Pb) metal with different concentration (1x10-5, 1x10-4, 1x10-3). Water mite species (Acari, Hydrachnidia) were placed in an equal number of aquariums and exposed to Pb for 96 hours. The heavy metal levels in the water tick and water were determined by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectroscopy ICP-OES; Spectro Genesis, Germany). In addition, antioxidant enzyme activities were determined from water mite samples in each aquarium. Significant data were obtained as a result of statistical evaluations.

Keywords: Water mite, Enzyme, Heavy metal, Lead

Acknowledgements: This study is supported by TÜBİTAK.

Length- weight relationship of anchovy, engraulis encrasicolus (linnaeus, 1758) from mersin bay, northeastern mediterranean, Turkey

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Anchovy, Engraulis encrasicolus (Linnaeus, 1758) inhabits near the substrate and in the water column. Engraulis encrasicolus is the most important commercial fish species inhabiting Turkish Seas. Bu there is no information on the length-weight relationship of E. encrasicolus in the North-eastern Mediterranean coast of Turkey. This paper is to determine length-weight relationship and condition factor of E. encrasicolus caught coasts off Tuzla, Mersin Bay, North-eastern Mediterranean.

A total of 607 anchovy specimens were caught by a commercial purse seiner from different stations at a depth of 88 m off the Tuzla coasts in Mersin Bay, North-eastern Mediterranean between April 2018 and May 2019. The samples were transferred to the ecophysiology laboratory of Fisheries Faculty Firat University where they were identified and sexed. Total lengths and weight were determined to the nearest 1 mm and the weight of each specimen was weighted with a digital scale nearest to the 0.01 g.

Length-weight relationships of E. encrasicolus were estimated as W=0.0013*L2.996, R2=0.94 for sexes combined W=0.0014*L2.971, R2=0.91 for males and W=0.0015*L3.022, R2=0.95, for females. According to these values, the growth type of this species was isometric for males and all sexes, positive allometric growth for females.

Keywords: Engraulis encrasicolus, Anchovy, growth, Length-weight relationship, North-eastern Mediterranean

Records of adult and newborn specimen of aetomylaeus bovinus from mersin bay, north-eastern mediterranean sea

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Bull ray, Aetomylaeus bovinus (E. Geoffroy Saint-Hilaire, 1817) inhabits both benthic and pelagic environments and it is also observed close to the surface of the sea. These rays are one of the ovoviviparous elasmobranch and females give birth to 3-7 young of 45 cm, after a gestation period of 6-8 months. This paper declares the existence of neonate and adult female of A. bovinus caught coasts of the Mersin Bay, North-eastern Mediterranean.

Adult and neonate fish individuals of Aetomylaeus bovinus were captured accidentally by a commercial purse seiner in a single haul at a depth of 30 m off the Deliburun coasts in Mersin Bay, North-eastern Mediterranean. The samples were transferred to the ecophysiology laboratory of Fisheries Faculty Firat University where they were identified, sexed and photographed. Total lengths and disc widths were determined to the nearest 1 mm and the weight of each specimen was weighted with a digital scale nearest to the 0.01 g. The specimens were preserved at the Museum of Fisheries Faculty, Firat University (FFM-FISH/2018-01 and FFM-FISH/2018-02).

Total length, disc width and weight of adult female A. bovinus were 168.3 cm, 103.2 cm and 18517.00 g respectively and these measurements for neonate female were 75.0 cm, 49.9 cm and 924.00 g respectively. Thus, coasts of the Mersin Bay may be parturition and nursery area for this species.

Key words: Aetomylaeus bovinus, Bull ray, neonate, reproduction, North-eastern Mediterranean.

Monitoring birds of himalayas through community participation

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Himalayan mountains are known for its rich avian species diversity and possess numerous popular birding sites which are regularly visited by bird watchers, naturalists and wildlife enthusiasts. The presence of diverse variety of bird species of which many are endemic have been playing critical role in maintaining the ecology of Himalayan mountains. However, these mountains are experiencing human pressure owing to tourism, expansion of town and cities, expansion of highways, infrastructure development and dam building etc. Therefore it is pertinent to monitor the bird of Himalayas under changing environmental conditions. Considering the above facts, a systematic bird surveys are being carried out in majour towns and cities of Himachal Pradesh, India. The study showed avian homogenization in Himalayan cities along with presence of some rare and threatened bird species. Monitoring of bird population is providing valuable information regarding the habitat quality of these towns in term of supporting avian diversity. Apart from this sites were also identified based on avian species diversity. The results of the monitoring are being shared with the native people through public lectures, environmental awareness competition programmes and social media. The school students are especially engaged in monitoring common birds through short field exercises. The collected field data can be used to assess the sustainability of Himalayan cities based on the criteria of avian species richness. Further, the informed and environmentally sensitized citizen can bring societal changes desirous for conservation of biodiversity which ultimately leads to sustainable development.

Keywords: Himalayas, Birds, Citizen Science, Environmental Awareness, Urban Ecosystem

Differential diagnosis between progressive supranuclear palsy and multiple system atrophy based on analysis of speech disorders

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In the last year' conference, I gave a brief overview of a major research project recently funded by the French research agency. This project consists in a pilot study to investigate early differential diagnosis between Parkinson's disease (PD) and atypical parkinsonian syndromes (APS) using voice and speech. The project federates 5 partners, 3 research institutes and the neurology and ENT departments of 2 university hospitals. In this year' conference, I will present an overview on the scientific progress we have achieved in this project.

In early stages of the disease, PD and APS symptoms are very similar, particularly in APS patients where parkinsonism predominates. The differential diagnosis between APS and PD can be very challenging in early disease stages, while early diagnostic certitude is important for the patient because of the diverging prognosis. Indeed, despite recent efforts, no validated objective marker is currently available to guide the clinician in this differential diagnosis. The need of such markers is hence very high in the neurology community, particularly given the severity of the prognosis of APS.

The main goal of our project is to develop a non-invasive objective digital marker to assist in the early differential diagnosis between PD and APS.

Speech impairment is a common early symptom in these diseases and of different origin. Our approach is to use these impairments, through advanced digital processing of voice recordings of patients, as a vehicle to distinguish between PD and APS in early disease stages. I shall present our recent findings in discrimination between tow types of APS, Progressive Supranuclear Palsy (PSP) and Multiple System Atrophy (MSA). I will also present research axis that could interest the participants at the conference in order to trigger potential collaborations.

Keywords: Biomedical science and engineering, Parkinsonism, speech disorders

The healing effect of pulsed electromagnetic field on rat burn model

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The aim of this study was to evaluate the effect of pulsed magnetic field on cutaneous wound healing in an animal burn model and to determine the dose-duration parameters of the magnetic field which may help to enhance the second degree deep burn model.

A total of 40 adult Wistar Albino rats were used in the study. The “comb burn model” defined by Regas was used to create a 2nd-degree deep contact burn on the rats’ back. Rats divided into five groups; the C-B (control; burned rats), S-B (burned rats dressed with saline), AP-B (burned rats dressed with antibiotic pomade rats), C-PMF1 (Burned rats exposed to pulsed magnetic field for 1 week) and C-PMF2 (Burned rats exposed to pulsed magnetic field for 2 week) groups. Pulsed magnetic field application (1.5mT and 40Hz): Plexiglass cages with up to 5 rats were placed between Helmholtz coils and the whole system was isolated in Faraday cage. The rats in C-PMF1 group were exposed to the pulsed magnetic field for 1 hour, while those in C-PMF2 were exposed for 2 hours once a day during the 14-day experimental period. After 2 weeks, the burnt areas were excised and the presence of neutrophil infiltration, vascularization and epithelialization in the zone of stasis were examined histopathologically.

As a result of histopathological examinations, neutrophil infiltration was found to be higher in C-B, S-B, AP-B and C-PMF1 groups, and less in C-PMF2 group, whereas fibroblast count was higher in C-PMF2 and less in other groups. While vascularization was significantly higher in C-PMF2 group, no significant difference was found between the other groups.

Consequently, since the recovery period of burn wounds may affect patient mortality. The pulsed magnetic field to be applied at the appropriate dose and duration may be an adjunctive therapy in the treatment of burn patients.

Keywords: Burn models, pulsed magnetic field, wound healing

Acknowledgements: This study is supported by Çukurova University Scientific Research Foundation (Project Number:10986)

Refractive indices and dispersion of sf protein polymer

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Silk is a natural protein fiber spun by a variety of insects in nature and it has been used for thousands years as a textile for luxury clothing because of its texture, mechanical strength and optical luster. In here, the fibroin silk solution was used as a biomaterial. The refractive indices of silk fibroin (SF) protein polymer for various methods and relations were obtained and the refractive index dispersion of the SF protein polymer was analyzed in detail.

Keywords: Silk fibroin, biomaterial, refractive index, dispersion, bone tissue engineering.

Monitoring and yield estimation of soybean using satellite data in north Yüreğir region

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In this study, low cost satellite images were used for monitoring of the secondary soybean in Yüreğir Akarsu region of Çukurova. The ground truth of soybean parcel were checked using seasonal satellite images and the soybean sample picked up.

Two sets of seasonal Landsat data(july -august) between 2016 and 2018 were analyzed. The images which get in july is include to growing period of soybean which covered soil surface completly, and last of august term that term is contains the full soybean filling.

The Çukurova region has different field crops. In this study, the soybean which has rich nutritive value was monitoring. Seasonal images were used for checking of the soybean parcel and sampling. NDVI values of soybeans were determined. There were correlation between yield values of soybean and NDVI values.

Key words: Soybean, NDVI, image, Çukurova

Inter-annual changes of crustacean assemblages in Iskenderun bay, northeastern mediterranean

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This study was carried out to determine inter-annual changes of the biodiversity, abundance and biomass of the Crustacean assemblages in the Iskenderun Bay. The samples were obtained seasonally from April 2004 to April 2019 at 10 m and 20 m depth contours of the northwestern coasts of Iskenderun Bay using a commercial bottom trawler. After a subsampling procedure samples were brought to Cukurova University Fisheries Faculty laboratory in ice chests. During the study period, a total of 27 crustacean taxa were identified. Total biomass of Crustaceans was ranged between 1.28 and 17037.00 gr/h with a median value of 2135.22 gr/h. Total abundance values ranged between 1 and 1026 individuals/h during the study period. The overall median was 59.50 individuals/h. Seasonal variations of total crustacean biomass and abundance were significant with an increasing pattern towards summer seasons. Interannual variations of the both parameters were also significant at 0.1 confidence level with a fluctuating pattern.

Key words: Crustacean, Biodiversity, Biomass, Iskenderun Bay

Acknowledgements: This study is supported by Research and Project Unit (FBA-2017-7982) of Cukurova University

Growth parameters of the cuttlefish, sepia officinalis linnaeus, 1758 from Karataş coasts of mediterranean sea, Turkey

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This study was conducted in Karataş coasts and investigated growth parameters of cuttlefish Sepia officinalis from September 2002 to September 2003. Samples collected in 22 trawl surveys from Karataş coasts. The trawl surveys carried out at depths from 20 to 120 m. Samples were caught for all studied months. The seasonal von Bertalanffy growth parameters were quantified by Hoenig method using the LFDA (Length Frequency Distribution Analysis). It investigated that total 217 females, 399 males, and 289 indeterminate individuals. The lowest mantle lengths of males, females, and indeterminate individuals were 47, 62.22 mm, respectively. The highest mantle lengths of males, females, and indeterminate individuals were 152, 155, and 125 mm respectively. The growth parameter was calculated as K=0.90 year-1, asymptotic carapace width ML∞=19.5 mm, t0= -0, 70 -year, C=0 and WP=0.0 for total individuals, including indetermined.

Key words: Sepia officinalis, Cuttlefish, Growth Parameters, Karataş Coasts, Northeastern Mediterranean

Fillet yield of asian catfish (pangasianodon hypophthalmus) in different weight classes

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Asian catfish (Pangasianodon hypophthalmus) grown in Çukurova (Turkey) conditions was first grown in cage systems, then in greenhouse environment for 4 years in concrete ponds. During the feeding period, fish fed with commercial carp feed containing 32% crude protein were slaughtered at the end of the study and cleaned to remove their fillets. In this study, fishes belonging to 4 different size groups were divided into groups in order to investigate the difference in length on fillet yield. The experimental groups G1 consisted of 870,346 g live weight G2 1021,824 g, G3 group 1252,088 g, and G4 group 1516,302 g live weight average. In the study, the harvested fish weight, back height, visceral weight (weight of the internal organs), weight of the fillets and the rest of the weight of the weighed and proportional weights were calculated. Among the findings at the end of the study, it was observed that the Fillet Yields had a difference of 6,45% with the smallest group (G1) in which the fish group exceeds 1500 g. (P <0,05). According to the end-of-trial data, the best fillet yield was observed in G4 with 49.78%, followed by G3 (47.67%), G2 (47.03%) and G1 (46.76%) respectively. According to the results obtained from the study, the slaughter weight increased and the fillet yield increased.

Keywords: Asian Cat Fish, Panga, Fillet Yield, Slaughter weight

Growth, mortality and exploitation of the red mullet (*Mullus barbatus*, l., 1758) in iskenderun bay, northeastern mediterranean

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In this study age, growth and length-weight relationship red mullet (Mullus barbatus, L., 1758) stock was investigated in the western coast of Iskenderun Bay Northeastern Mediterranean. For this purpose, seasonal length and weight, distributions were obtained from a bottom trawl survey covering from 2011 to 2017. Seasonally oscillating von-Bertalanffy growth curves were fitted using an electronic length frequency analysis procedure (ELEFAN) of FISAT II software. In the course of study, total of 3010 individuals were investigated. Total length ranged from 4.6 to 21.4cm and mean length was 13.44±3.04cm; total weight ranged from 1.18 to 128.1g, and mean weight was 32.56±18.93g ignoring sexual differences. Length-weight relationship was W=0.009*L3.086 for total individuals. The best fits to the length frequency distribution were obtained with the following growth parameters L∞=22.58cm and K=0.66year-1 for total individuals. The parameters, total (Z), natural (M), fishing (F) mortality were 3.26year-1, 1.32year-1, 1.98year-1 respectively. Exploitation rates (E) of the population was found to be 0.60year-1 indicating that stock was under overfishing pressure in Iskenderun Bay where is one of the most overexploited area in the Eastern Mediterranean.

Key words: Population dynamics, ELEFAN, length-weight relationship, Levant Basin

Biofloc technology in recirculating aquaculture system: effect of different feeding rates on penaeus semisulcatus

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The aim of this study was to determine the effects of four different feeding rates (3, 6, 9, 12%) in Penaeus semisulcatus culture in biofloc and non-biofloc (control) using a recirculating aquaculture system (RAS). The experimental groups were started to feed with the body weights of 3, 6, 9 and 12%, respectively (each 40 L water volume, 20 shrimp/0,24 m2), and they were gradually maintained with decreasing rates until the 3% feeding rate. Biofloc was produced in a fiberglass tank at a rate of 100 shrimp/300 L. In this application molasses were used as a carbon source. The produced mature biofloc was inoculated into the main tank of the RAS of the biofloc groups. Molasses was used to the water after the daily feed so that heterotrophic bacteria could evaluate ammonia and nitrite. At the end of the 90-day trial, optimum feeding rates, feed conversion ratios, and survival rates were determined. The results obtained were compared with control groups in order to identify the effectiveness of biofloc. At the end of the experiment, the biofloc groups of 6, 9 and 12% were better than the control groups according to the growth parameters ($p<0.05$). Biofloc groups were also higher in terms of survival rates than in all control groups ($p<0.05$). Although this shrimp has naturally cannibalistic behavior, results showed that the higher survival rates were obtained in the biofloc groups. Biologically recyclable nutrients were utilized with decreasing feeding rates and it was confirmed that the biofloc was a nutritional supplement for Penaeus semisulcatus.

Key words: Nutrition, decreasing feeding, shrimp, growth

Acknowledgements: This study funded by the Scientific and Technological Research Council of Turkey (Tubitak, Project Number 118o096).

Biofloc as an economical and applicable production technology for the sustainability of aquaculture production

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The increase in the human population in the world encourages more food production. It is necessary to increase production efficiency in the unit area with limited resources. With the 2030 and 2050 projections of FAO and the World Bank, it is aimed to develop economic and applicable production technologies/methods for the sustainability of aquaculture production and problem-solving within the framework of the approaches of current knowledge, adaptation and mitigation options.

Researchers working in agriculture and aquaculture (biological sciences) in particular are conducting a large number of studies which test the hypotheses that are produced for the prevention of possible adverse effects by examining the mathematical models, projections, and scenarios developed in climate change.

It has developed the human consumer consciousness that is able to communicate rapidly globally. It is understood that the existence of educated and qualified human population who has understood the importance of healthy and reliable food production is a significant advantage. Researchers identifying problems and conducting solution-oriented research will reduce international awareness to local government policy development in the near future. In this way, the realization of practical and understandable methods by everyone will change our lifestyle and eating habits in the future. Our team has been tested and approved by our research team for a period of time for zero water change in restricted water resources and aquaculture. In this presentation, we will discuss the impacts of our efforts on sea-freshwater fish and arthropods, which have 3 years of experience, to reduce the negative effects of climate change and to eliminate possible food deficit problems.

Keywords: Limited water source, climate change, sustainable food production, biofloc technology

Occurrence of the erythraean moon crab matuta victor (fabricius, 1781) (*crustacea: decapoda*) in Iskenderun bay, north-eastern mediterranean sea

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Four males, a single female and a juvenile specimens of the invasive moon crab Matuta victor were collected at a depth of 30 -50 cm, on a sandy bottom, in Yumurtalik Cove, Iskenderun Bay, north-eastern Mediterranean in June 2017. This is the first occurrence of this species from the Iskenderun Bay, north-eastern Mediterranean Sea.

Key words: Matutidae, Erythraean alien, invasive species, Lessepsian, Levantine basin

Acknowledgements: This research work was carried out with the support of Cukurova University Scientific Found Projects FBA-2017-9199

Strigolactone effects on salinity and drought stress in sugar beet

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Nowadays abiotic stresses including salinity and drought stresses are widespread and environmentally destructive to plants and crop production. Therefore, acquiring knowledge of physiological responses of plants to drought and salinity is highly significant. This understanding may form a basis for genetic engineering in order to get more tolerant plants under salinity and drought stresses. Phytohormones can play role in triggering appropriate responses to stress condition e.g. salinity and drought. Even though the effects of well-known hormones on plants under salinity and drought conditions have intensively been investigated, however, those of new identified hormones have not. Strigolactones (SLs) are carotenoid-derived compounds, as recently introduced plant hormones have a wide range of biological roles such as responses to environmental stresses. In this study we aimed to investigate SLs' effects on Catalase activity (CAT), and chlorophyll content (Chlo) as stress criteria in drought/salinity-exposed sugar beets. Based on the findings, all hormonal treatments (Strigol, 5-deoxystrigol, and GR24) increased chlo a, b and total contents as compared with the control in both salinity and drought stressed sugar beets. The highest amounts of chlo a, b and total resulted from Strigol. Then 5-deoxystrigol and GR24 produced more chlo a, b and total in comparison with the control. Effects of Strigol (St) on increasing CAT enzyme activity was better than any other treatments. 5-deoxystrigol was the second best hormonal treatment in improving CAT enzyme activity. GR24, a synthetic SL, increased the activity of CAT enzyme, but its inducing effect was lower than the two other SLs. The same result was achieved in both salinity and drought conditions. In comparison with the control, all the hormonal treatments increased the activity of CAT enzyme. Based on the final outcomes of the present study, SLs could perform significant and changing roles in salinity and drought stresses and most probably the other abiotic stresses.

Key words: Strigolactones, drought, salinity, sugar beet

Acknowledgements: The financial support from TUBITAK (The Scientific and Technological Research Council of Turkey, Project No:TOVAG-116O368)

The relationship between some water quality parameters and abundance of three cladocera species in demrek dam lake (Hatay, Turkey)

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The existence of significant relationships between some water quality parameters and Cladocera amount has been determined. The population density of Bosmina longirostris was significantly correlated with temperature (R^2 = 0,5273) and silica (R^2 = 0,5061). Significant correlation was also found between the mean abundance of Diaphanosoma birgei and transparency (R^2 = 0,5257), temperature (R^2 = 0,6377) and hardness (R^2 = 0,6503). A significant relation was determined between total Cladocera amount and temperature (R^2 = 0,5894) and hardness (R^2 = 0,5058). It was determined that the relationship levels between other species and parameters were low.

Key words: Zooplankton, cladocera, water quality

The effect of larger fish on growth performance of carp (*cyprinus carpio*) in cage

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In this study, it was aimed to determine the effect of size difference between large individuals and small individuals on growth performance during size grading of zero-aged mirror carp (*Cyprinus carpio*). 0 years old 1 to 3 g fry that have just completed the larval stage were stocked in cages placed in the pond at a rate of 20 fry / m^3 and fed for 90 days. Trial groups; A group consisting of a small group (Smalls), consisting of 1 g and half 2 g (G1), consisting of half 1 g and half 3 g (G2). At the end of the experiment, it was observed that the individuals in the Control group (10,11 ± 2,56g) grew better than the others in the other groups ($P < 0.05$). The G1 group consisting of 1 and 2g individuals had a better Food conversion ratio (1.4 ± 0.03) compared to other groups ($P < 0.05$). As a result, it was observed that the size grading and different size combination between the groups had an effect on growth performance of common carp offspring, especially when they are stocked as 1 + 2 g, it is observed that good competition established and this situation has a positive effect on the development of bulk fish.

Key words: Size grading, Size difference, Mirror carp

Amniotic fluid: a potential preservation solution of the kidneys in organ transplantation

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Background: Amniotic Fluid (AF) has not previously been reported as a preservation solution for the kidney. In this study, we investigated the effectiveness of AF as a preserving solution for rat kidney compared with the University of Wisconsin (UW), Histidine-Tryptophan-Ketoglutarate (HTK), and Ringer's Lactate (RL), which have been reported as the most used and preferable preserving solutions.

Methods: Forty female Sprague Dawley rats were used in this study. UW, HTK, RL, and AF solutions were administrated to different groups. Histopathological evaluation was performed after Hematoxylin&Eosin staining.

Results: The results of the AF group were close to those of the UW and HTK. Tubular necrosis and vacuolization were high in the RL solution group when compared to the other experimental groups.

Conclusion: UW, HTK, and AF had similar and higher protective effects compared to the RL solution. Thus, AF may be used as an inexpensive and readily available alternative a natural tissue preservation solution.

Key words: Amniotic fluid, University of Wisconsin solution, Histidine-Tryptophan-Ketoglutarate solution, Ringer's Lactate solution, Kidney

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Evaluation of anticancer activity of synthesized silver nanoparticles using zingeber officinale extract

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Objective: In the diagnosis and treatment of cancer, which is one of the most important health problems, various researches are carried out in order to further the nanotechnological methods that are already used and to find new treatment methods. Nanoparticles are usually clusters of atoms in the size range of 1-100 nm. It was shown that metal nanoparticles, in particular silver nanoparticles (AgNPs) were effective in cancer therapy.

Material-Method: In this study, AgNPs were synthesised using Zingiber officinale (Z-AgNP) extract. The synthesized Z-AgNPs were characterized using ultraviolet-visible (UV-vis) spectroscopy, SEM-EDX and particle size analyzer. Then, cytotoxicity effects of the Z-AgNPs against MCF-7 breast carcinoma cell line and CRL-4010 human mammary epithelial cell line as normal cell line were performed. The cytotoxic effect of silver nanoparticles was determined by MTT assay.

Results: The UV-vis spectroscopy results showed a strong resonance centered on the surface of Z-AgNPs at 440 nm. The nanoparticles synthesized were an average size of 30 nm. Z-AgNPs inhibited growth of MCF-7 and CRL-4010 cells dose-dependently, following 24-h treatment (IC50:8,43µg/mL). Z-AgNPs showed cytotoxic effect on CRL-4010 cells

higher doses than cancer cells (IC50:9,26µg/mL).

Conclusion: In this study, we have demonstrated a simple approach for the synthesis of AgNPs using the Zingiber officinale extract. Furthermore, the present findings suggest that Z-AgNPs could contribute to the development of a suitable anticancer drug for breast cancer.

Key words: Silver Nanoparticles, AgNPs, MCF-7, CRL-4010, Zingiber officinale

Biofloc application in narrow-clawed crayfish (*Astacus leptodactylus*) culture: preliminary results

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In this study, the use of biofloc technology (BFT) in crayfish culture for 32 days was tested. Two groups (initial total lengths, TLi and weights, Wi measured) within 3 replications were planned as BFT application group (TLi: 112.17±0.99 mm, Wi: 37.61±0.97 g) and control group without BFT (TLi: 112.22±0.94 mm, Wi: 37.61±0.87 g). Six crayfishes were stocked in each tank with a volume of 80 L (70x40x30 cm). In the experiment, molasses was used as a carbon source in BFT application. Carbon/Nitrogen ratio was optimized at 15. All tanks were continuously aerated. Crayfish were fed 3% of body weight twice a day (12h light-12h dark). At the end of the experiment water quality parameters were measured (for BFT application group T: 20.2±1.1°C, saturation: %70±1.0, dissolved oxygen: 6.2±0.8 mg L-1, pH: 7.6±0.7, PO4:0.5±0.1 mg L-1, N-NO2-:0.1±0.1 mg L-1, N-NO3-:2.0±0.1 mg L-1, salinity: 0.002 ppt and for the control group T: 20.3±1.0°C, saturation: %73±2.6, dissolved oxygen: 6.4±0.6 mg L-1, pH: 7.3±1.2, PO4:3.0±0.1 mg L-1, N-NO2-:0.50±0.25 mg L-1, N-NO3-:25.0±5.0 mg L-1, salinity: 0.001 ppt). There were no differences between the groups (control TLf: 112.33±1.03 mm, Wf: 37.49±0,87 g and BFT TLf: 112,83±0,77 mm, Wf: 37,97±0,87 g) regarding growth measurements. As a result, it was found that crayfish showed 100% survival rate in BFT application compared to control group (77.77%). These results showed that the biofloc technology could be implemented in future practically for the crayfish culture.

Key words: BFT, crayfish, recycling, zero water change, growth

Studies on iPSC banking in Turkey

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Induced pluripotent stem cells (iPSCs) which could be achieved by de-differentiation of somatic cells have great importance in translational research and drug dosing/toxicity. It is regarded as an indispensable material for regeneration in clinical studies. In fact, iPSC based-personalized medicine promises great hope in pioneer countries such as Japan. iPS cells were first discovered by Japanese scientists in 2006 and awarded by Nobel Prize in 2012.

A huge number of projects are being conducted all over the world in iPSC field and biobanks are being established to provide fully characterized iPSCs to researchers. Because of the multi-challenging steps in the derivation of iPSCs banking, even in handling, working with iPSCs is not an easy task but it is an essential component for the scientific world. In our study, we aim to contribute to the following: i)Development of the quality control tools which would improve standardization and productivity in iPSC research and banking, ii)Initial adaptation of quality management to the field of iPSC banking, iii) Establishing an iPSC banking process and operation model that combines the examples of best practices, iv)Conducting a preliminary study of a metabolic activity assay-based method destined to contribute to the identification process of iPS cells in banking, v) Input for legislation especially at the national level.

In the laboratories of our center (Center for Stem Cell Research and Development/PEDI-STEM), firstly, iPSCs were obtained from patients with rare diseases and healthy donors by 2 different re-programming methods and were characterized with the support of TUBITAK. Additionally, other studies related to properties of iPSC metabolic activity and also quality management of banking were supported by the Scientific Research Projects Unit of Hacettepe University. On the other hand, projects in our center supported by TUBITAK consisting of different sourced IPSC or IPSCs for different disease models contribute to the final aim of iPSC banking initiative in Turkey.

Key words: iPSCs, biobank, Turkey

Consumers' egg type purchase preferences by regions in Turkey

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This study aims to reveal the preferences of consumers of eggs by region in Turkey. In this context, a total of 547 people were interviewed face to face with the 7 regions of Turkey in the research. In the survey, the consumers were asked consumption frequencies of different eff types (standard brown, standard white, free range, functional and organic eggs). As a result of the data obtained, a statistically significant difference was found between the regions for all types of eggs ($p < 0.01$). The Kruskal Wallis test was used to test the difference between the regions. The analyzes were performed by SPSS 21.0 software.

Key words: Egg varieties, purchase preference, consumer, Turkey

Determination of consumption preferences of seafish and freshwater fish according to socio-demographic characteristics of the consumers

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In this study, the similarities and differences between the consumption preferences of sea fish and freshwater fish according to the socio-demographic characteristics of the seafood consumers have been revealed. For this purpose, a face-to-face survey was conducted with 407 people in Adana. In the study, it was found that 347 out of 407 people consumed aquaculture and 60 did not consume aquatic products. Percentage frequency values of the data were found by using SPSS.21.0 package program. According to the findings, sea fish is consumed most in males with a rate of 83.1% while freshwater fish is consumed more in women with a rate of 20.9%. According to age, sea fish consumption is consumed by 95.6% in the 45-54 age range, while the freshwater fish is consumed in the under 25 age group with a rate of 18.1%. According to the educational level, primary and secondary school graduates consumed sea fish with a ratio of 86.2%, while the group with graduate education consumed the most with freshwater fish. 88.9% of the craftsmen group preferred the most sea fish, while 25.9% of the housewives the most preferred group of freshwater fish emerged. According to income status, individuals with high income group prefer sea fish more, while middle and low income individuals prefer freshwater fish more than others. While individuals with small households prefer sea fish more, individuals with large households prefer freshwater fish more. When the results were examined, it was found out that consumers preferred sea fish consumption more than their socio-demographic characteristics and it was found that freshwater fish consumed at high rates.

Key words: Sea fish, Freshwater fish, Consumption preferences, consumer, Adana

Determination of the egg consumers' socio demographic characteristics and egg type preference relations in Turkey

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This research aims to reveal the effect of socio-demographic characteristics of consumers on different egg types. The study was conducted with data obtained through a face to face survey face of Turkey's seven regions. This study was conducted with data obtained from a face to face survey in 7 regions of Turkey. The research was carried out in the May-July 2018 period with 547 consumers who are responsible with food purchase of their household. As the dependent variable in the survey, egg types was accepted as the dependent variable in the survey and socio-demographic data were accepted as independent variables and the answers of the questionnaire were designed according to Likert type scale. The data were analysed using descriptive statistics and sequential probit regression methods with SPSS © 21 and STATA © 13 statistical software. According to the results of the analysis, positive and negative relations were determined between standard egg, free range chicken egg, functional egg and organic egg and some socio-demographic characteristics of the consumers (gender, number of family, education and income).

Key words: Egg type, socio-demographic characteristics, ordered probit model, Turkey

Determination of the relationship between consumed medicinal and aromatic plant species: a survey study in mediterranean region of Turkey

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In this study, it was determined whether there is a relationship between medicinal aromatic plant species used by consumers. The research material consists of a face-to-face survey conducted in Adana, Antalya, Hatay, Mersin and Osmaniye. Sperman correlation analysis method was used for data analysis. Data were tested with SPSS package program. 52.3% of the respondents were women, 30% were housewives, 44% were primary school graduates and 31.8% had 4 households. According to the results of the research, it was found that mint consumers prefer black pepper, thyme, cinnamon, garlic and cumin more than other plants and there is a positive significant relationship between them ($p < 0.01$). In addition, it was found that black pepper consumers consumed thyme, cinnamon and garlic more than other plants and there was a positive significant relationship between them ($p < 0.01$). In addition, it was determined that individuals who consume oregano consume cinnamon, ginger, rosemary, dill, garlic, basil and clove plants intensively and there is a positive significant relationship between them ($p < 0.01$).

Key words: Medicinal Aromatic Plant, Consumer, Correlation

Effect of taurine supplementation on growth response and body composition of hybrid tilapia (*Oreochromis niloticus x o. aureus*)

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Taurine is a prerequisite for certain dietary types, especially when reducing fish meal levels in their diet. Taurine supplementation has not yet been evaluated in the hybrid tilapia (Oreochromis niloticus x O. aureus). In this study, the effect of taurine supplementation on hybrid tilapia growth parameters was investigated. Fish (2.15 ± 0.01 g) were fed into four experimental groups fed by feed with taurine concentrations of 0% (control), 5, 10 and 15g / kg in the feed and fed for 90 days until satiation. At the end of the experimental feeding period, the highest (15g / kg) taurine-supplemented group fish (34.41 ± 1.90g) were found to have higher live weight gain compared to the fish in all other groups (P <0.05). The growth values obtained were 32.78 ± 1.46g, 31.48 ± 0.89g, 31.88 ± 1.42g, respectively. However, it was observed that the addition of taurine to the diets adversely affected the Feed Conversion Rate of hybrid tilapia (P <0.05). The specific growth rate of hybrid tilapias fed with a high level of taurine-supplemented feed was found to be significantly higher than the other groups (3.03 ± 0.05, 2.98 ± 0.03 and 2.98 ± 0.05) (P>0.05). As a result, it can be suggested that 15 g/kg taurine supplementation may be offered to feeds in nutrition for better growth of the offspring hybrid tilapia.

Key words: Taurine, Hybrid Tilapia, Aquaculture, Fish nutrition

Evaluation of fatty acid profile of mesocarp and seed of loquat (*Eriobotrya japonica L.*)

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Eriobotrya japonica, loquat, is a large evergreen tree of the Rosaceae family, which is mostly cultivated for its tart fruit. The aim of this study was to investigate the total oil and fatty acid composition of the mesocarp and seed of laquat fruit grown in southern Iran. The total oil content of samples were extracted with Soxhlet apparatus using n-hexane as a solvent and the fatty acids in these samples were extracted by methylation with boron triflouride / methanol complex and analyzed by Gas Chromatography – Flame Ionization Detector (GC–FID). The averages of oil content were 1.21% and 14.3% for mesocarp and seeds, respectively. GC–FID revealed that unsaturated fatty acid content in laquat mesocarp (75.43%) was higher than that of seeds (51.46%). Oleic acid was the main fatty acid both in mesocarp (30.25%) and seed (25.92%). Other fatty acids of mesocarp were linolenic acid (23.38%), linoleic acid (17.28%), palmitic acid (16.76%), stearic acid (6.39%), and arachidonic acid (3.04%), respectively. While, lignoceric acid (19.39%), palmitic acid (16.56%), arachidonic acid (12.55%), stearic acid (11.35%), linoleic acid (8.14%), and palmitoleic acid (3.98%) were the major components in fatty acids of seeds, respectively. The results showed that the sum of saturated fatty acids in the seed oil is higher than the mesocarp, and also the seed oil has a higher mono unsaturated fatty acids-to-poly unsaturated fatty acids ratio, so this study predicts that loquat seed oil could be stored safely during a longer period of time than mesocarp oil and could be used in cosmetic and pharmaceutical products. Based on the large amount of loquat seed oil and its fatty acid composition, it is recommended more research should be conducted using this natural oil in edible and non-edible products.

Key words: Fruit, gas chromatography, oil, oleic acid

Development of microcapsules with prolonged action based on essential oils with antioxidant and antimicrobial properties

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Nowadays, biologically active substances originated from plants are widely used in the pharmaceutical, cosmetic, and food industries, both as individual compounds and as extracts, essential oils, obtained from natural raw materials. The difficulties faced while using essential oils in technological processes include their low solubility in aqueous media, high volatility, due to which the effectiveness of preparations rapidly decreases. So it makes sense to achieve a prolonged effect by developing immobilized forms of herbal remedies with essential oils. The immobilization of bioactive substances on sorbents or in polymer material of different nature allows one to change aggregation state of essential oils and improve chemical and aggregate stability in complex compositions, provides a prolonged or stimuli-dependent release of the active ingredient. The work carried out on assessing the composition of the essential oil of Monarda fistulosa, Satureja montana, its antioxidant and antimicrobial activity. The obtained results indicate that the essential oils of beebalm and mountain savory have unique biological activity including antimicrobial and antioxidant, which significantly exceeds that of other studied essential oils of Lamiaceae family. It was proposed a method for packing biologically active substances of plants in biocompatible matrices with the formation of an additional shell of chitosan and silicon oxide, which allows us to obtain microencapsulated material with a high content of biologically active substances of plant origin.

Key words: Essential oil, Monarda fistulosa, Satureja montana, microcapsules, prolonged action

The effect of chlorella vulgaris produced in the solar bioreactor on seed germination, plant growth and yield of cucumber

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Biofertilizers are products (carrier or liquid based), which are safe and cost effective in terms of increasing soil agricultural fertility and productivity rather than the conventional use of chemical fertilizer, comprising living or dormant microbes (bacteria, actinomycetes, fungi, algae) alone or in combination. Also, they support in fixing atmospheric nitrogen or solubilizers soil nutrients as well as the secretion of growth promoting substances for enhancing crop growth and yield. This study is aimed at investigating the potential of Chlorella vulgaris produced in the new designed the solar bioreactor for growth promoting activity and its role in enhancing soil fertility. C. vulgaris was cultured in a solar bioreactor system by optimizing growth conditions. C. vulgaris was applied for cucumber in two different forms which were dry algae application (2.5 g seedling-1) and liquid algae application (250 mL seedling-1). Plants with no algae application were used as control. Disease free cucumber seeds were obtained from a market and inoculated with Chlorella vulgaris, followed by monitoring for 8 weeks. Seed germination were determined by using liquid algae application in petri dishes. Also, plant height, leaf count and fresh weight of the plants were determined alongside with soil physico-chemical analyses (soil pH, potassium, nitrogen, phosphorus, organic carbon and matter) by using pot experiment. This study has shown that Chlorella vulgaris application is efficient and economical in improving soil nutrients for greater productivity of cucumber. Thus, it was recommended that as a novel biofertilizer formulation to farmers seeking for an alternative to the use of NPK fertilizers which have posed a huge challenge to post harvest stability, product quality and environmental sustainability.

Key words: Mikroalg, solar bioreactor, cucumber, chlorella vulgaris

Effects of humic acid applications on wind erosion in laboratory scale wind tunnel

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One of the most remarkable alternative approaches for soil conservation is the application of artificial polymers to the soil in order to improve or maintain soil structure and aggregate stability. In the study, a total of two soil samples were taken from Konya agricultural land and it is aimed to investigate the effect of the application of humic acid on the surface of these soils at low concentrations, using new designed laboratory scale wind tunnel. The study was carried out in a mini wind tunnel under laboratory conditions on two different soil samples with different textures taken from the Konya plain where the traditional tillage methods are applied and with the risk of drought and desertification. Then, the air-dried soil passed through a 1 mm sieve was filled in 25x30x1 cm pans and humic acid applications were applied on the samples corresponding to 0-0,5-1-2 and 4 L da-1 levels, and each treatment was replicated three times. After 24 hours of humic acid application, the samples were placed in a wind tunnel and exposed to simulated winds of 11 m s-1 for 10 minutes. The results obtained from the study showed that 0,5 and 1 L da-1 humic acid applications in sandy clay loam textured soil and 2 and 4 L da-1 humic acid applications in clay loam textured soil considerably reduce the amount of soil lost by wind erosion compared to control and other applications. In conclusion, we observed that the humic acid applications increased the crust resistance of the soils in the SCL texture, whereas the humic acid applications did not affect the crust formation and resistance of the soil in the CL textures.

Key words: Wind erosion, Wind tunnel, Humic acid, Texture

Evaluation of relationship between obesity and cardiac markers

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Obesity is defined as abnormal or excessive fat accumulation that presents a risk to health. It is caused by the imbalance between energy consumed and the spent, and, is an important health problem with increasing frequency all over the world. It is known that obesity has adverse effects on many organs and systems such as dyslipidemia, insulin resistance, diabetes mellitus, hypertension and cardiovascular disorders. The effects on the cardiovascular system are especially a big risk because of the morbidity and mortality it may cause. In this study, it was aimed to investigate the relationship between obesity and the increase of cardiac markers which are indicators of cardiovascular disorders. The obesity group was consisted 124 females aged of 12-72 (48.2 ± 6.5) and 9 males aged 15-64 (48.2 ± 6.5), and the control group was consisted 97 females aged 15-61 (46.2 ± 8.9) and 29 males aged 15-62 (46.2 ± 8.9). The results of blood serum analyses showed that total cholesterol ($p < 0.009$), triglyceride ($p < 0.002$), LDL-cholesterol ($p < 0.033$), CK-MB mass ($p < 0.001$) and cardiac troponin I (cTnI) ($p < 0.001$) levels were significantly different as they are compared to control group. HDL-cholesterol levels did not show any statistically meaningful difference ($p > 0.256$). Any correlation was not detected among the parameters of total cholesterol ($r = 0.041$, $p > 0.697$), triglyceride ($r = 0.111$, $p > 0.294$), HDL-cholesterol ($r = 0.034$, $p > 0.750$), LDL-cholesterol ($r = 0.021$, $p < 0.848$), CK-MB mass ($r = 0.199$, $p < 0.058$) and cTnI ($r = 0.062$, $p > 0.559$). As a consequence of these findings, obesity increases the risk of cardiovascular disease, and obesity patients are more likely to had myocardial infarction compared to healthy individuals.

Key words: Blood lipid parameters, cardiac markers, obesity

Effect of common food additives on human serum paraoxonase-1 (PON1) activity

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The human serum paraoxonase-1 (PON1) enzyme (aryl esterase, EC 3.1.8.1, hPON1) synthesized in the liver then secreted to serum. This enzyme is associated with HDL and inhibits oxidized LDL. Also this vital enzyme has capable of catalyze highly toxic compounds such as sarin and soman. In this study it was investigated in vitro effects of common food additives (sodium benzoate, aspartame, sodium acetate, sodium sulfite) on the activity of paraoxonase-1 (PON1). For this purpose PON1 was purified from human serum via chromatographic methods, including first ammonium sulphate precipitation then sepharose 4B-hydrophobic chromatography. The four different food additives decreased PON1 activity in vitro. Results showed that all food additives inhibited PON1 at micro molar levels. The IC50 values for sodium benzoate, aspartame, sodium acetate and sodium sulfite were 30.4, 27.6, 19.6 and 12.1 micro molar respectively and the Ki constants, inhibition type were determined. Ki values of sodium benzoate, aspartame, sodium acetate, sodium sulfite were 14.3, 9.6, 7.4 and 10.2 micro molar respectively. The result of this study showed that the dose of commonly used food additives should be considered. As mentioned above, the change in the activity of the paraoxonase enzyme, which is very important for metabolism, can cause diseases and may also undermine the detoxification system. However, in literature there is very limited studies have investigated the effects of food additives on PON1 activity.

Key words: Paraoxonase, purification enzyme, food addites

Development of a colorimetric hydrogen peroxide biosensor via hemoglobin-based hybrid materials

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Hydrogen peroxide (H2O2) is a most common oxidizing compound and plays an essential role as an oxidizing, bleaching, and sterilizing agent in different industrials such as food, pharmaceutical, clinical, textile bleach, disinfectant, environmental wastes, and cosmetics. High concentrations of H2O2 are cytotoxic for animal, plant and bacterial cells. Thus, it is need a novel method to establish a quick and accurate method to monitoring the concentration of H2O2. Recently, biosensor studies based on the biocatalytic activity of iron containing proteins instead of enzyme-based biosensors have been carried out to develop more stable and low-cost biosensors. Hemoglobin is having heme group protein and presenting peroxidase like activity. Also chemical structure of hemoglobin enables to formation of protein-inorganic hybrid materials.

In this study; we synthesized hemoglobin-based hybrid materials using hemoglobin as organic component and Cu2+ ions as inorganic component considering protein-inorganic hybrid nanoflower preparation method. The effect of synthesis conditions (pH, protein and metal ion concentration, etc.) on the morphology, chemical structure and the catalytic activity of the hybrid structures were examined systematically using different techniques (SEM, EDX, XRD, IR) comparatively with the free hemoglobin. Then minimum linear range was detected for colorimetric assay of H2O2. These results proved that the hemoglobin-based hybrid material had potential application in the colorimetric biosensor for H2O2.

Key words: Hydrogen peroxide, Hemoglobin, Hybrid Material, Colorimetric assay

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Optoelectronic properties of silk fibroin solution for biomaterial applications

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Silk (S) is a natural semicrystalline biopolymer. Fibroin (F) protein is the major structural component of the silkworm's cocoon fiber. The F offers great potential for use in medically related applications due to lack of immune response and the high degree of biocompatibility. Silk fibroin (SF) is a natural protein polymer. Bombyx mori silk consists of two kinds of proteins, fibroin and sericin. Nowadays, the SF has been extensively used as a technological material even though it was used for centuries in biomedical applications. In here, the fibroin silk solution, which is made of 100% fibroin protein was used. Optoelectronic parameters such as optical band gap, transmittance, dielectric constant and conductivity components of the silk fibroin solution were obtained and were discussed for biomaterial applications.

Key words: Silk, fibroin, silk fibroin, biopolymer, optoelectronic parameters, optical band gap

Synergic antioxidant and antibacterial activity of reduced graphene oxide and green synthesized copper nanoparticles

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The development of reliable, environmentally friendly processes for the synthesis of nanoscale materials is an important aspect of nanotechnology. Recently, the bio-green method of using plant extract has gained a unique importance due to the less time requirement in the synthesis of nanoparticles and the use of less toxic substances. On the other hand, recently, two-dimensional nanomaterials have emerged as antibacterial substances and they also have potential as a new class of antioxidants that combine physical barrier function with ultrahigh surface area for free radical scavenging. In this study, we aimed to determine the antioxidant and antibacterial activity of rGO–CuNPs and G-CuNPs nanocomposites. that will result in the synergistic effect which is expected to occur with the composite structures formed by combining the copper nanoparticles synthesized biologically from the Broccoli green extract and the reduced graphene oxide and graphene, respectively. Graphene was prepared from natural graphite according to a novel route developed in our lab and reduced graphene oxide was prepared from natural graphite following Hummers method. The rGO, G and CuNPs solutions were combined at the ratio of 1:1 using vigorous stirring for 2 hr, yielding rGO–CuNPs and G-CuNPs nanocomposites. The synthesized graphene and nanoparticles structures were characterized by various analytical methods such as Uv-VIS, SEM and FTIR. The sensitivities of Staphylococcus aureus (S. aureus) to rGO, G, rGO–CuNPs and G-CuNPs nanocomposites were determined by the agar diffusion method. In addition, these nanocomposites were subjected to Free radical scavenging activity (DPPH), reducing power activity (FRAP), ABTS + radical scavenging activity, Cu2+-Cu+ reducing Capacity (Kuprak method) and metal chelating activity. As a result, we found that the combination of synthesized rGO–CuNPs and G-CuNPs nanocomposites caused noteworthy changes in antibacterial and antioxidant activities, and green extract modified CuNPs and reduced graphene nanocomposites revealed the maximum antioxidant activity.

Key words: Antioxidant, antibacterial, copper nanoparticle, graphene oxide

Antibacterial and antioxidant activity of Nerium oleander mediated synthesis of silver nanoparticles in comparison with its methanolic leaf extract

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Among the various known synthesis methods, the use of plants for the synthesis of nanoparticles is rapid, low cost, ecofriendly, safe for human therapeutic use, and is a single-step method for biosynthesis process. Nerium oleander is a member of family Apocynaceae and is native to the Mediterranean regions of Europe and Asia and is also an extremely poisonous plant and contains numerous toxic compounds. The present study was carried out to determine the antibacterial and DPPH (1, 1-diphenyl-2-picrylhydrazyl) radical scavenging activity of synthesized silver nanoparticles (AgNPs) using aqueous leaf extract of N. oleander in comparison with methanolic leaf extract of N. oleander. The synthesized silver nanoparticles were characterized using UV-Vis spectroscopy, energy-dispersive X-ray spectroscopy (EDX), transmission electron microscopy, X-ray diffraction and dynamic light scattering (DLS) technique. The invitro antimicrobial activity of Nerium oleander leaf extracts were studied against Staphylococcus aureus and Escherichia coli by using the agar well diffusion method. Using DPPH reagent, the antioxidant property was also evaluated. The results of antibacterial activity were compared with the zones of inhibition produced by AgNPs synthesized by using aqueous leaf extract of N. oleander and by commercially available standard antibiotics. The results showed that the methanolic extracts of N. oleander and its mediated silver nanoparticles showed inhibition zone against all the tested bacteria.

Key words: Nerium oleander, silver nanoparticle, methanolic extract, antibacterial, DPPH

Toxicity investigations of organic-inorganic hybrid nanoflowers on the tenebrio molitor larvae

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Organic-inorganic hybrid nanoflowers with commercialization potential are novel hybrid nanomaterials, and are widely used in many applications, recently. Nanomaterials have potent risks to the environment with their concentration, morphology, migration, and transformation processes. Organic-inorganic hybrid nanoflowers are used as an industrial material; inevitably, they will be released into the environment like other nanoparticles. In addition, the toxicity of nanomaterials might be stemmed from the rigid particle frameworks, including metal ion and/or organic component types. However, the harmful effects of organic-inorganic hybrid nanoflowers and rigid framework's (pure copper phosphate nanoflowers) on living organisms are still unknown. In this study; (a) the distribution of acridine orange molecules to overall the organic-inorganic hybrid nanoflowers were observed (FCPnfs), and (b) also the toxic part and levels of the nanoflowers using T. molitor larvae as a model were evaluated. The results showed that different amount of acridine orange caused different morphology and the organic component was homogeneously distributed inside the nanoflowers. The toxic effects of the prepared FCPnfs were investigated in Tenebrio molitor larvae compared with pure copper phosphate nanoflowers (CPnfs). According to probit assay, LC50 and LC99 values of FCPnfs were found 0.49 and 0.145 mg, respectively. On the other hand, LC50 and LC99 values of CPnfs were found 0.066 and 0.172 mg, respectively. Importantly, the results showed that FCPnfs was more toxic than CPnfs. It was found that the insect exhibited greater resistance to CPnfs than FCPnfs when compared to both chemical toxic values. The knowledge of organic-inorganic hybrid nanoflowers chemical and toxicological behaviours, provide us to exhibit preventive behaviours on the materials to be produced and their effects on the environment. These new findings will offer new ideas how to design new materials for industrial uses.

Keywords: Organic-Inorganic Hybrid Nanoflowers, Fluorescent Copper Phosphate Nanoflowers, Pure Copper Phosphate Nanoflower, Tenebrio molit

Green Synthesis of silver nanoparticles using Salvia Officinalis and its potential cytotoxicity in human breast cancer cells (MCF-7)

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Objective: Cancer is a major health problem worldwide and new studies are being carried out for the treatment. The use of metallic nanoparticles as silver nanoparticles (AgNPs), especially those reproduced using the green synthesis method, give hope as anti-cancer agents in the field of medicine. In the present work, we aimed to evaluate the cytotoxic effect of green synthesized AgNPs on MCF-7 breast cancer cells.

Material-Method: A biosynthesis method was developed for the synthesis of AgNPs using Salvia Officinalis (Sage) leaf extract. The formation of the plant-mediated synthesis of AgNPs was characterized by UV-visible spectroscopy and scanning electron microscopy (SEM) with Energy dispersive X-ray (EDX) patterns. CRL-4010 human mammary epithelial cells and MCF-7 breast cancer cells were treated with AgNPs at various concentrations for 24 hours. The cytotoxic effect of green synthesized AgNPs against MCF-7 cell lines was approved by MTT assay.

Results: The strong broad peak related to Ag nanoparticles was observed at 417 nm by the UV-Visible analysis. AgNPs prepared using Sage leaf extract were determined to inhibit cell growth in a dose-dependent manner following treatment of MCF-7 cells for 24 hours. MTT assay shows that AgNPs have higher inhibition efficacy in MCF-7 breast cancer cell lines than CRL-4010 human mammary epithelial cells.

Conclusion: Biogenic AgNPs were synthesized using the extract of Salvia Officinalis (Sage). AgNPs exhibited a significant cytotoxic effect on MCF-7cell lines and it can be a potential alternative anti-tumour agent in breast cancer treatment. However, further investigations using in vivo animal models are necessary to confirm anticancer effects of green synthesized AgNPs.

Key words: Silver Nanoparticles, MCF-7, Salvia Officinalis (Sage)

Economic Losses Due to Fertility Disorders in Dairy Cattle Enterprises: Burdur Province Sample

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For a sustainable production of dairy cattle enterprises, fertility-related disorders need to be managed well. In this context, criteria such as age at first calving (ACF), calving interval (CI) and number of insemination per conception (NIPC) are the parameters that will help in the follow-up of the business. In this study, it was aimed to calculate the financial losses arising from the deviation of these parameters from the target values in 31 dairy cattle farms operating in Burdur province. The mean ACF, CI and NIPC values were calculated as 888 days, 427 days and 1.67 semens respectively, according to the results of the study. In general, the average financial loss due to 1 day delay in ACF and CI was determined as 26.09 TL/cow (4.27 US$/cow) and 18.12 TL/cow (2.96 US$/cow) respectively. As a result, the total financial loss of ACF, CI and NIPC due to deviations from the target values was calculated as TL 1.777.206 (US$ 290.868).

Key words: Cow, fertility, economic loss

Enzootic pneumonia in a beef farm despite regular vaccination programme

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Calf pneumonia is a major problem in beef herds. It is a multifactorial disease, and the most common post-mortem diagnosis in calves between one to six months of age. In this study, it was aimed to reveal the causes of rapidly spreading enzootic pneumonia in one week despite the regular vaccination in the beef farm.

In this study, 70% acute infected and 10% chronic infected cases were evaluated in calves with 400 beef calves between 2-4 months of age. Calves that are 2 months old are transferred to this farm with use a long-acting antibiotic. It has been used inactive viral (IBR, BRSV, PI-3, BVD) vaccine at four times at 21-day intervals, and inactivated bacterial (Pasteurella and Manhemia) vaccine two times at 21-day intervals. Four weeks after the transport to this farm started to seen sporadically coughing and fever in calves. However, when the transport stress, crowded calf barns, heat stress, stress by sudden changes in diet and diarrhea related with diet changes combined the pneumonia cases have reached 70%. Bronchoalveolar-lavage was taken from the animals because of the cases that did not respond to the antibiotics and bacterial culture and antibiogram were made. The response to treatment according to the antibiogram was obtained, but it was observed that unless the factors causing stress in the herd were not eliminated, these pneumonia signs would not disappear and would pose a threat to the young animals at feature.

In addition, sporadic infection was found to be rapidly spreading due to crowded calf barns. As a result, it was seen that enzootic pneumonia cases could be seen unless stress and disease transmission factors were eliminated despite regular vaccination. In conclusion, vaccines are available to reduce risk of infection, however they must be used alongside an effective management programme.

Key words: Enzootic Pneumonia, calves, stress factors

Investigation of Efficacy of Coagulase Test on coa Gene Positive *Staphylococcus aureus* Isolates

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Staphylococcus aureus is an important pathogen in foodborne intoxications. One of the most important identification tests used to differentiate of S. aureus from other *Staphylococcus* species is the detection of coagulase properties. The coagulase test can be performed in two ways: tube and slide test. Tube coagulase test is a costly and time consuming application. Polymerase chain reaction (PCR) is considered as the most important molecular identification method. coa gene which responsible for coagulase production can be detected by PCR method in *S. aureus* identification. In this study, total of 69 isolates were investigated for the presence of a coa gene encoding the production of coagulase by PCR method. The presence of coa gene was detected in 19 isolates. Then, in order to investigate the effectiveness of the coagulase test, the isolates were analysed by tube coagulase test. Six of the coa gene positive isolates were detected a positive reaction with the tube coagulase test. Totally 13 of 19 isolates were found negative or weak reaction. As a result of the study; It can be emphasized that the coagulase test alone is not sufficient in the validation of S. aureus and that the presence of coa gene and other identification tests are required.

Key words: Coa gene, Coagulase test, *Staphylococcus aureus*

Dermatofit isolation and identification from cats and dogs in Ankara

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Dermatophytosis is a common infection in many parts of the world affecting skin, nails and hair follicules in humans and animals. Classical lesions formed by dermatophytosis agents are circular with being called as ringworm. The disease is both of veterinary and public health importance since it can be transmitted to humans. In this study, a total of 100 cat and dog hair samples, skin scrapings and ear swaps from several private clinics in Ankara were investigated between 2018-2019. The specimens were first examined microscopically and then seeded to the Sabouraud Dextrose Agar (SDA) followed by incubation at 25 ° C for 1-4 weeks. Out of 100 samples, 24 samples (24%) were positive for mushroom hyphae and spores in directmicroscopy, while 28 samples (28%) were culture positive for dermatophytosis. The causative agent was isolated and identified in 18 of 60 dogs (30%) and in 10 of 40 cats (25%). The distribution of the isolated agents according to animal species was found as 72.3% Microsporum canis, 16.7% M. gypseum, 5.5% M. nanum and 5.5% Trichophyton mentagrophytes in dog materials and 70% Microsporum canis, 10% M. gypseum, 10% T. terrestre, 10% T. mentagrophytes in cat materials. Most of the agents were isolated and identified in spring and summer months.

Key words: Dermatophytosis, cat, dog, Ankara

Investigation of serum iron, zinc and copper levels on sheep in the central area of Şanlıurfa

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The importance of the trace elements in local animal husbandry has newly just come to the agenda. Trace elements are one of the cornerstones of life and the lacks of these elements are important terms of parasitic and infectious diseases and loss of yield in sheep and lambs. Trace elements present very low amounts in the organism have great importance in many metabolic processes and immune function. In this study, it was aimed to determine the serum levels of Fe, Cu, and Zn in the sheep in Sanliurfa province.

The study area was chosen as the central district of Sanliurfa and this region divided into four sub-regions. The blood samples were collected from 100 sheep (as 25 samples in each sun-region). In the analysis of the serum levels of iron, copper and zinc with FS-Atomic Absorption in the four regions were measured as 131.02+3.32 mg/dL, 85.96+3.22 mg/dL and 73.31+1.91 mg/dL, respectively.

When the obtained data compared with the reference value; the levels of iron and copper were normal and the level of zinc was low. The zinc levels were significantly lower ($p<0.01$) in 2nd and 4th region than the other regions in the variance analysis. As a result, in the central of Sanlıurfa, zinc deficiency was measured more specifically. And it may be mentioned that hidden zinc deficiency was available.

Keywords: Copper, Iron, Sheep, Sanliurfa

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Circulatory thiol disulphide levels among naturally infected calves with *giardia duodenalis*

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Giardiasis is a gastrointestinal disease of humans and other animals caused by species of protozoan parasites belonging to the genus Giardia. This disease is transmitted mainly via the faecal–oral route (e.g., in water or food) and is of socioeconomic importance worldwide. Giardiasis is mainly caused by *Giardia duodenalis* (syn. *Giardia intestinalis* and *Giardia lamblia*). This study was aimed at the investigation of the circulatory thiol disulphide levels among naturally infected calves with *Giardia duodenalis*. Diagnosis of *G. duodenalis* infection was microscopically determined based on the detection of cysts in faecal samples. Blood samples were collected from jugular vein into the tubes (Vacutte, USA) containing with clot activator. All samples were centrifugated at 3000 rpm for 10 min and sera were kept on -80°C until analyses. Thiol/disulphide parameters were analyzed with a commercial ELISA kit (Real Assay Diagnostics, Turkey). The parameters were calculated. Native thiol infected with giardia 45.6 ± 22.6 (µmol/L), total thiol 82.4 ± 27.6 (µmol/L), Disulphide 23.17 ± 15.28 (µmol/L), disulphide/native thiol 326.24 ±111.17 (%) Disulphide/total thiol 35.17 ± 8.9 (%). In conclusion this study will shed light on further studies.

Keywords: Calves, *Giardia duodenalis*, Thiol Disulphide

Spatial distribution of *giardia duodenalis* and *cryptosporidium* spp. Among neonatal diarrheic calves in aegean and middle anatolian regions

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Cryptosporidium spp. and *Giardia duodenalis* are common zoonotic enteric protists causing clinical and subclinical infections in farm animals worldwide, and also pose a significant threat to public health. This study was aimed spatial distribution of *G. duodenalis* and *Cryptosporidium* spp. among neonatal diarrheic calves in Aegean and Middle Anatolian Regions. The study was carried with the fecal samples obtained from 71 neonatal diarrheic calves in different dairy farms Aegean and Middle Anatolian Regions for *G. duodenalis*, 68 neonatal diarrheic calves in different dairy farms in Aegean and Middle Anatolian Regions for *Cryptosporidium* spp. The samples were then stored at +4 ° C until they were transferred to the laboratory. Then, DNA was extracted with QIAamp DNA Stool Mini Kit according to the manufaturer's protocol. The extracted DNA was preserved at −20 °C until further analysis. Nested PCR technic was carried out by applying protocol and related primers for *G. duodenalis* and *Cryptosporidium spp*. Nested PCR was conducted on all 71 samples for *G. duodenalis*. Specific bands (511 bp) were obtained in 30 (42.2%) calves. Nested PCR was conducted on all 68 samples for *Cryptosporidium* spp. specific bands (840 bp) were obtained in 11 (16.1%) calves. In conclusion high Giardia infection rates such as 42.2% and Cryptosporidium infection rates such as 16.1% in calves were determined by Nested PCR.

Keywords: Calves, *Cryptosporoidium* spp., *Giardia duodenalis*

Importance of green nanoparticle synthesis in animal nutrition

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In the area of animal nutrition to reach effective and high productivity on issues such as live weight gain, feed efficiency, desired product quality, health protection and disease control and treatment are benefited from the applications of nanotechnology. Nanoparticles used as feed additives have higher bioavailability, because of their novel characteristics, such as greater specific surface area, higher surface activity, high catalytic efficiency and stronger adsorbing ability. They exhibit higher absorption efficiencies and reaches deeper into the tissues. Thus, nanoparticles can be used in animal feeding to improve bioavailability of nutrients, production performance and immune status in livestock . Because of the bioavailability is high it also can lead to little excretion of these particles in the stool so reducing in environmental pollution. Nanoparticles, can be synthesized by physical, chemical and biological means. As one of the biological methods, integration of biological components in the formation of nanoparticles leading to the green synthesis has emerged as novel method and gaining more importance. Because some of the chemicals used for the synthesis of nanoparticles are toxic and they cannot be directly used. Biological methods are safe to use and can be efficiently exploited without further experiment on residual effect. Eco-friendly green nanoparticles are synthesized using various plant species such as Avena sativa, Azadirachta indica, Aloe vera, Alfalfa, papaya fruit extract, lemongrass, Sesbania drummondii, latex of Jatropha cutcas . As a result, green synthesis method can be preferred because of it has many advantages such as being eco-friendly and economical, reducing the problem of waste product, not harming human health, low toxic substance content, ease of application and the less time consuming. However, a great amount of research is required to support the effectiveness, useful and the safety of green nano-synthesis in animal nutrition.

Key words: Nanotechnology, animal nutrition, green nano synthesis, nanoparticle

A new marker for evaluation of mastitis pathophysiology: IMA

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The reactive oxygen derivatives resulting from any ischemia in the organism lead to modification of albumin. As a result, ischemia-modified albumin (IMA) is formed. Albumin is measured using cobalt binding test. This test is used for early detection of ischemia before the onset of non-transient damage. In this study, IMA and some parameters were evaluated after mastitis vaccination in dairy cow herd with subclinical mastitis from tank milk. Blood samples were obtained from all dairy animals (n=44) before and after the mastitis vaccine. Student's t test was used to make the comparison by using SPSS programme. Accordingly, pre- and post-vaccination values 74,56±2,39; 72,62±3,29 (P>0,05) were found respectively. In subclinical mastitis cases, IMA levels decrease due to post-vaccination treatment. At the same time, these parameters may be an important parameter in monitoring flock-based ischemic-inflammatory changes. According to literature reviews, IMA data are presented for the first time in cases of subclinical mastitis.

Key words: IMA, Subclinical Mastit, Oxidative stress parameters

Population pharmacokinetics of gentamicin in puppies diagnosed with parvovirus enteritis

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BACKGROUND: Gentamicin is a concentration-dependent antibiotic indicated with other drugs in managing canine parvovirus enteritis (CPE). This study evaluated effect of common co-medications and pathophysiologic covariates of puppies with CPE on pharmacokinetics of gentamicin. METHODOLOGY: Fifty puppies with CPE were administered a single intramuscular dose of gentamicin at 6.0mg/kg. Sparse blood samples were obtained over 24hrs and gentamicin concentrations quantified using ELISA. Population pharmacokinetics was evaluated employing non-linear mixed-effect modeling in MONOLIX® 4.3.3 to elucidate effect of covariates on pharmacokinetics of gentamicin. Simulation of serum concentration-time profiles was performed with MLXPlore 1.1.1. RESULTS: A two-compartment model with first-order absorption and elimination described pharmacokinetics of gentamicin. None of the covariates was significantly affected gentamicin pharmacokinetics. However, allometric scaling with BWT and estimated exponents accounted well for effect of body size on clearance and volume of distribution (V). Also, large between-subject variability of 86% was observed in V. Simulations with dose levels 4-10mg/kg showed trough serum concentrations within 0.46-1.47µg/mL with corresponding steady state concentrations of 5.26-13.17µg/mL at 2.6hrs post second dose.

CONCLUSION: Weight was the only covariate affecting pharmacokinetics of gentamicin in our cohort of puppies. Our model indicates safe and effective serum concentrations at dose levels 6-9mg/kg.

Key words: Monolix, puppies, covariates, parvovirus enteritis, gentamicin

Evaluation of how low-frequency magnetic field effect on contraction parameters and proteins in uterus muscle in pregnancy rats

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The purpose of this study is to examine whether acutely or chronically exposure to low-frequency pulsed magnetic field (PMF) is adversely effect on contraction proteins and parameters of the uterine muscle in pregnancy terms of rats.

Pregnant fifty-six rats divided into 8 groups (in each group, n= 7) according to pregnancy terms of rats; Exposed-pulsed magnetic field (Control, Early-PMF, Middle-PMF and Late-PMF of pregnancy terms) and unexposed groups. End of the pregnancy terms of rats, firstly were collected blood from rats for measure to contraction proteins levels (myosin light chain kinase (MYLK) and calmodulin (CAM)), then, uterine rings mounted in an organ baths. Uterine rings were allowed to equilibrate at 1.5 g tension for 60 min. The amplitude of contraction-force and contration-frequency in uterine rings was measured with isometric force transducers and MP35 systems.

The uterine contraction parameters were analyzed as gram force (gf) and area (AUC;gxs). At the early-term of pregnancy, contraction force and AUC (under the curve) increased and at early and late terms of pregnancy, contraction force and frequency decreased in exposed to pulsed magnetic field groups compared to the control groups. Also, Myosin light chain kinase (MYLK) and calmodulin (CAM) levels significantly decreased in early and late terms of pregnancy rats in exposed to pulsed magnetic field groups compare to control groups.

Findings suggest that acute or chronically non-invasive pulsed magnetic field exposure have no adversely affect in terms of pregnancy if the mother does not have any other symptomatic problem. Also non-invasive pulsed magnetic field application may help prevent unpleasant symptomatic progression in early and late terms of gestation. Therefore, there is a need for more detailed investigations whether acute or chronic exposure to pulsed magnetic field is affect.

Keywords: Pulsed Magnetic Field, Contraction Parameters, Contraction Proteins, Pregnancy Rats

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Preliminary results on the feeding of engraulis encrasicolus larvae in iskenderun bay, northeastern Mediterranean

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Trophodynamics are among the most significant constraints on larval survival and therefore, recruitment success of small pelagic fishes. However, little is known about this subject in the eastern Mediterranean Sea. Here, we present preliminary results on feeding of larval Engraulis encrasicolus in Iskenderun Bay during spring season. Ichthyoplankton samplings were performed during an ichthyoplankton survey which was conducted at 30 stations in 21-22 April 2017 all along Iskenderun Bay. Samples were collected by using double oblique Bongo Net tows from bottom to surface and immediately fixed using 4% buffered formaldehyde. Temperature, salinity, dissolved oxygen, pH and Secchi depth were measured simultaneously at each station and, chlorophyll-a values were measured at the selected stations during the samplings. After the taxonomical analysis, Engraulis encrasicolus larvae were photographed for morphometric analyses and dissected using a microdissection needle for gut content analyses. In context of the study, a total of 36 larval individuals were investigated. Their standard length ranged from 3.95 to 11.54 mm. A total of 6 planktonic prey groups were detected in the diet of Engraulis encrasicolus. Copepoda constituted 67% of diet diversity followed by phytoplankton with 8%. Nauplius stages of copepods were the most important prey item. Prey size ranged between 19.56 and 82.30 □m. There was not a significant relationship between prey size-predator size.

Keywords: Anchovy, Clupeiformes, Diet, Engraulidae, Trophodynamics

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Evaluation of levels of total protein, albumin and blood lipid parameters in diabetic patients

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Diabetes Mellitus (DM) is an endocrinological disorder with the increasing incidence in Turkey and worldwide. According to many wide-ranging researches, it is proved that there is a strong relationship between blood lipid parameters and coronary artery disease. One of the major reason for death in DM patients is due to the development of atherosclerosis and chronic coronary artery disease with macrovascular complication. Coronary artery disease risk, compared with the normal population more likely seen in patients with DM. Diabetes and obesity affect blood lipid levels. In addition, irregular blood sugar levels affect the whole system and have some negative effects on lipid levels. Controlling blood sugar and weight gain in obese patients affect primarily serum lipid level, and many parameters in a positive manner. The research here has been done on 60 patients (serum glucose level > 110 mg/dl, 212.42 ± 98.01) living in Bursa/Orhangazi and 54 healthy people having normal blood glucose (70-110 mg/dl, 92.74 ± 9.54) level. Blood sugar tests, triglycerides, total cholesterol, HDL, LDL, total protein and albumin analysis in both our groups were analyzed. According to our control group blood sugar tests, total cholesterol and triglyceride ($p < 0.0001$), total protein ($p < 0.005$), albumin ($p < 0.05$) levels in our patient group have been found significantly different. Although HDL cholesterol levels have been found low; any statistical significance was not detected ($p > 0.05$). In addition, we have not found any statistically significant difference in the correlation analysis among any of the parameters. These findings suggest that DM is associated with significantly increased dyslipidemia, and decreased total protein and albumin levels. The changes in these parameters might be considered as an indicator of many underlying systemic diseases.

Keywords: Blood Lipid Profile, Coronary Heart Diseases, Diabetes.

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