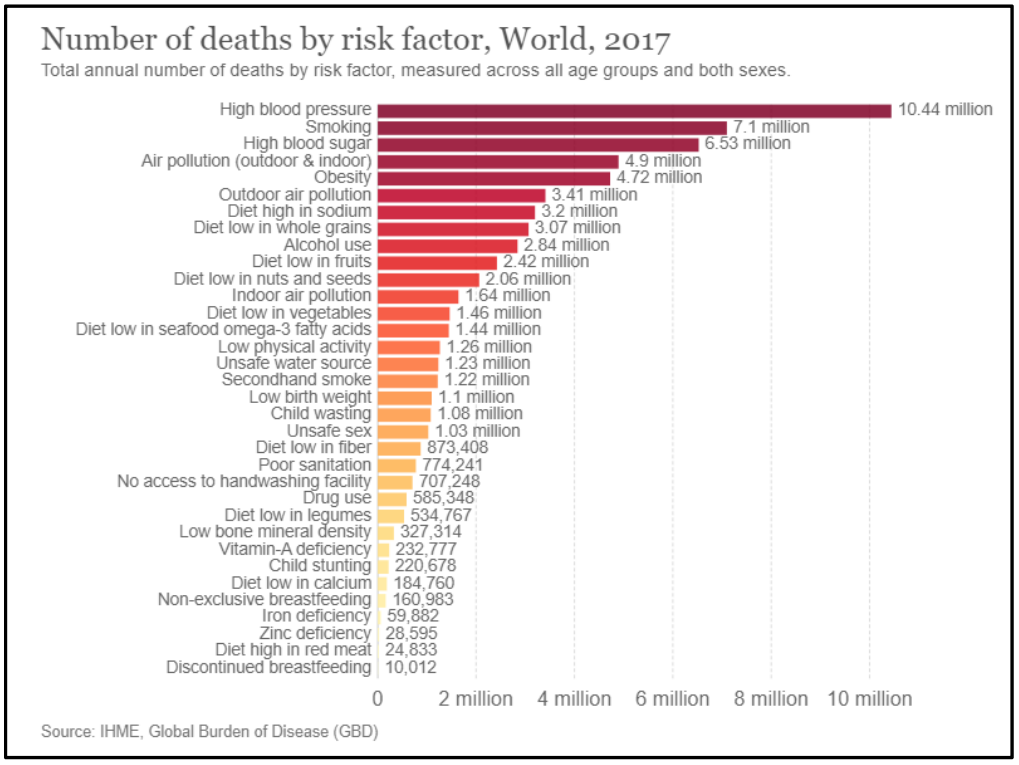
ICPM 2020 ONLINE

# 2nd International Conference on Preventive Medicine (2nd ICPM)

# PROCEEDING BOOK

## Editor: Mehmet Yaman




**25-28 November 2020**

**Online-Turkey**

# Preface

The organizing committee of the **2nd ICPM 2020** would like to welcome all participants to the meeting "**2nd International Conference on Preventive Medicine (2nd ICPM)**", held as online between 25-28 November 2020. The 2nd ICPM 2020 was started in 2019 and covers multidisciplinary fields: from "Nutrition, Hygiene and Food safety" to Environmental Factors on human health, from Occupational health to Medical Support, from Lifestyle-Stress and mental health factors to Early Diagnosis and Bioindicators of Diseases.

The scientific conference program consists of 7 sessions that include **10 invited and 15 oral** presentations as well as **1 virtuals** to be present in the respective sessions. In addition, researchers of Academia (**19 universities from 6 countries**) and Research Institutes will present up-to-date last developments on Preventive Medicine as well as applications to a wide range of various matrices.

We strongly believe that the presentations/questions/answers among the participants during the 4 days of the meeting will make **2nd ICPM** a useful meeting, particularly in favor of the young scientists participating in the conference.

We wish you all to enjoy this conference, hoping to meet you again during the future **ICPMs**.

With our best regards
The Chair (on behalf of Organizing Committee)
Prof. Dr. Mehmet YAMAN
Firat University, Science Faculty, Department of Chemistry, Elazig-Turkey

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## GENERAL INFORMATION

### Introduction

The **2nd International Conference on Preventive Medicine (2nd ICPM)** will be held on 25-28 November 2020 as online from Turkey is a four-days scientific meeting covering all areas of Safe Nutrition, Health Risk Factors, Early Diagnosis and Bioindicators of Diseases as well as their interactions with Chemical and Biochemical Analysis. The international conferences have provided an excellent framework for the presentation of new concepts, both investigations and on experimental animals related with preventive medicine. Researchers and scientists from Universities, Research Institutions, State Organizations, and the Drug Industries come together during the meeting to present and discuss the current state of the art in those areas. At the same time, it provides the grounds for the graduate and post-graduate students to present their projects, discuss scientific collaborations with other scientists.
I strongly believe that young researchers will have chance to improve their knowledge in deep of the preventive medicine by coming together with experienced scientists including invited speakers and other presenters.

## Topics

To promote collaboration among scientists related with preventive medicine from different countries, "**2nd ICPM 2020**" will provide adequate opportunities.
The topics include all areas of Preventive Medicine in applications such as, but not limited to, nutrition, biological and food matrices, environmental protection, biochemical studies, drug characterisation, method innovation and validation, instrumental development and applications, sensors and nanobiosensors.
The congress covers: the title of Nutrition, Hygiene and Food Safety (genetically modified and recombinant foods, Round up ready foods and feeds, Hormone and Antibiotic usage in veterinary, Usage of herbicide and pesticides, Food-additives, supplements, audits, fraud and adulteration, high fructose corn syrup (HFCS) and health risks-unhealthy nutrition, Toxic and endocrine disrupting chemicals in foods and food chain, Chemicals affecting intestinal microbiota, Influence of diet on mental health and behavior),
In the title of Environmental Factors (chemicals emitted from Industrial, thermal power and solid waste including plastics–incineration plants, and Radiation (particularly from common usage in the hospital and radiation applications in foods), Other risk factors from environmental (air, water and soil)-Indoor and outdoor pollution,
In the title of Early Diagnosis and Bioindicators of diseases (proteomics, metabolomics, metallomics, Potential New drugs and Analytical chemistry in preventive medicine)
In the other titles; Lifestyle-Stress and mental health factors (including despair and hope),
Drugs and vaccines, Public Health, Physical activity facilities, Actuators for Systemic diseases,
Traditional therapy and diseases, Medicinal plants -Bioactive molecules, Occupational health
Personalized preventive medicine, New methods in the determination of potential drug molecules and Medical Geology.

## Location of Conference

The conference will be held as **online** from Turkey.

## The presentation

Scientific program will include Invited Speakers, which will provide an up-to-date presentation of modern trends in preventive medicine as well as of related subjects of chemical and biochemical analysis-interest. Oral Presentations will also be presented as online. Contributed papers describing original research work will be also presented as virtuals in order to promote efficient discussion on new scientific ideas and results. The virtual presenting authors should add their presentations on the power point file. The presentations can be in both English and Turkish. Virtual and oral presentation will be accepted if at least one of the authors is registered and present at the conference for personal communication.

## OPENING SPEECH

**Dear Honorable Professors, Colleagues and Participants,**

I am very happy to welcome all the participants coming to "**2nd International Conference on Preventive Medicine**"

**Respectable academics and friends;**

Nowadays, the world is like a city and it is extrapolated from a single source to nutrition.

Particularly, the spread of genetically modified food to all countries, and

the unconscious use of recombinant products in backward countries,

require researchers to collaborate more and

multidisciplinary and up date studies is gaining importance.

In recent years, unpredictable health risks due to both the possibility of the ruling powers in the world to monopolize the world's nutrition and the spread of local traditional medical practices that are not the result of scientific methods, increase the need for preventive medicine.

As a result of the first mentioned risk, obesity, especially the problem of obesity among young people, has started to be effective in many countries and the relevant authorities support scientific meetings by hosting awareness-raising activities.

In particular, Covid19 and the requirements such as testing and immune system development to avoid it increase the importance of this conference.

From this point of view, the first objective of this conference is to provide the opportunity for researchers interested in preventive medicine to come together and to exchange ideas in analytical-perspective meetings.

This conference was launched for all those purposes.

Hereby, I would like to thank the invited speakers, the members of Scientific Committee and especially for your participation, and I would like to express our honor to online host the conference.

**Statistical Information about the Conference**

The scientific conference program consists of **7 sessions** that include **10 invited** and **15 oral** presentations as well as **1 virtual**. The participants are of **19 universities** from **6 countries**. I believe that the presentations and the questions/answers during the 4 days will make this conference a useful meeting.

I wish you all to enjoy this conference.

- My best regards**.**

  **Prof. Dr. Mehmet Yaman-**
  **Chair**

# CONFERENCE PROGRAM

## 2nd International Conference on Preventive Medicine

## (2nd ICPM 2020)

**25-28 November, 2020, Online**

| | |
|---|---|
| | **25 November, 2020** |
| 16.00-16:30 | ➢ **Welcome Ceremony**<br>➢<br>**Prof. Dr. Mehmet Yaman (Chair)**<br>**Prof. Dr. Seref GUCER** (on behalf of continuation committee)<br>*Honorable* |
| 16:45-17.15 | ***Inv. 1: Prof. Dr. Erdem YESILADA-Yeditepe U/TR***<br>➢ ***The Power Of Herbals Against Infectious Diseases*** |
| | **26 November, 2020** |
| | **Session 1- Chairs: Prof. Dr. Durisehvar Unal- Prof. Dr. Ozlem Sogut** |
| 10:00-10:30 | ***Inv. 2: Prof. Dr. Devrim GOZUACIK-Koc U/TR***<br>**Autophagy as a target for disease prevention and treatment** |
| 10:30-10:40 | Tea/Coffee break |
| 10:45-11:15 | **Inv 3: *Prof. Dr. Engin ULUKAYA-Istinye U/TR***<br>**Microbiota: A New Organ for General Health and Immun System** |
| 11:30-12:00 | OP1- **Rawil Fakhrullin-*Kazan Fed. U/RU***<br>Dark-field hyperspectral microscopy for label-free fly ash and microplastic particles imaging and identification |
| 12:00-14:00 | **Lunch** |
| 14:00-14:30 | **Session 2 - Chairs: Dr. Mariia Nesterkina-Dr. Nagihan Karaaslan Ayhan**<br>**Inv 4: Prof. Dr. Hasan TURKEZ-Ataturk U/TR**<br>**Boron compounds as immune's-boosting agents** |
| 14:30-14:40 | Tea/Coffee break |
| 14:40-15:10 | OP2 **Seyda Yildiz-*Ataturk U/TR***<br>*A Novel Gene Delivery Method for Transformation of Yeasts Used in the Production of Biopharmaceutical Proteins*<br>*OP3-* **Melek Acar- *Ataturk U/TR***<br>*Synthesis of Magnetic Nanoparticles for Biomedical Applications and Their Use in Magnetic Hyperthermia*<br>OP4-**Taha Turgut Unal- *Uludag U/TR***<br>Determination of the elemental content of Tagetes erecta by ICP-MS and investigation of the potential effects on the organism by in-vitro digestibility studies |
| 15:10-15.20 | *Tea/Coffee break* |
| | **Session 3 -: Chairs: Prof. Dr. Mutay Aslan-Prof. Dr. Hasan Turkez** |
| 15:20-15:50 | **Inv 5: Prof. Dr. Ilhan YAYLIM-*Istanbul U/TR***<br>**The Critical Importance Of Galectin-3 On The Regulation Of Inflammation, Cell Proliferation, And Apoptotic Response** |
| 15:55-16:25 | **Inv 6: Prof. Dr. -Umit Zeybek-*Istanbul U/TR***<br>**Genetic approach to nutrition** |
| 16.25-16.35 | OP5-**M Kerem Ozyavuz-Istanbul U/TR-**<br>How Our Microbiata Affects Our Life? |

| | |
|---|---|
| | **27 November, 2020** |
| 10.00-10:30 | **Session 4 -** Chairs: **Prof. Dr. Sema Bagdat-Dr. Mustafa Celebier**<br>***Inv 7: Prof. Dr. Tugba BOYUNEGMEZ TUMER-Canakkale 18 Mart U/TR***<br>**Natural product derived small molecules as promising chemopreventive interventions in chronic inflammatory diseases** |
| 10:30-10:40 | *Tea/Coffee break* |
| 10:45-11:15 | OP6- **Ilmutdin M. Abdulagatov-** ***Dagestan State U/RU***<br>ALD Coated Polypropylene Mesh to Prevent Mesh-Related Post-Surgery Complications for Hernia Repair |
| | OP7- **Mariia Nesterkina-Odesa PTU/U-**<br>Anticonvulsant activity of hydrazone based on (+)-camphor and valproic acid |
| 12.00-14:00 | **Lunch** |
| 14.00-14.30 | **Session 5 -:** Chairs: **Prof. Dr. Yusuf Dilgin -Prof. Dr. Dilşat Ariksoysal**<br>**Inv 8: Prof. Dr. Secil OZKAN-*Gazi U/TR***<br>**Risk Communication And Community Participation In Pandemic Control** |
| 14:45-15:15 | OP8- **Muhammed Alpgiray Çelik-** ***Uludag U/TR***<br>*Determination of Element Level of Bee Pollen Samples Collected from Domaniç District of Kütahya Province* |
| | OP9-**Nalan Çırak-** ***Uludag U/TR***<br>Determination of Physico-Chemical and Sensory Properties of Beef Salami Using Different Microalgae in Production |
| | *VP1-* **Fatma Nur ATALAY DİNLER-*Selcuk U/TR***<br>*Synthesis Of Copper And Zinc Complexes Of A Schiff Base Derivatized From Phenylalanine* |
| 15:15-15:25 | *Tea/Coffee break* |
| 15:30-16:00 | **Session 6 -:** Chairs: **Prof. Dr. Rawil Fakhrullin-Assoc Prof. Dr. Umran Seven Erdemir**<br>**Inv 9: Prof. Dr. Altan ERCAN –*Abdullah Gul U/TR***<br>**Gender dichotomy on the correlation of immunoglobulin G glycosylation with rheumatoid arthritis disease activity** |
| 16:10-16:50 | OP10-**Erturk Bekar-*Uludag U/TR-***<br>*Comparison of Extraction Methods on the Fatty Acid Profiles of Tagetes erecta* |
| | OP11- **Cemre Örnek Ergüzeloglu -*Uludag U/TR***<br>*In silico analysis of human microbiota-related key genes and molecular pathways in colorectal adenocarcinoma* |
| | OP12- **Etil Guzelmeric-*Yeditepe U***<br>*Determination of quality parameters for the aerial parts of Cistus creticus L. used as a medicinal herbal drug* |
| | OP13- **Zeynep Ozsahinoglu-*Uludag U/TR-***<br>*Assessment of in vitro Bioaccessibility of Copper, Molybdenum, Zinc and Tungsten in Turkish Hazelnut (Corylusavellana L.) Samples by in vitro Methods* |
| | OP14-**Taha Turgut Unal-** ***Uludag U/TR-***<br>*Assessment of the elemental content and bioaccessibility of Matthiola incana by ICP-MS* |
| | **28 November, 2020** |
| 10.00-10:30 | **Session 7-** Chairs: **Prof. Dr. Sezgin Bakirdere**<br>***Inv 10: Prof. Dr. Hiroshi AKIYAMA- NIHS/JP***<br>**Food safety risk management in *Japan*** |
| 10:45-11:15 | OP15- **Huseynova Qumru Orkhan-** ***Azerbaijan Medical U-***<br>R761H M694I, M694V, V726A, R202Q, M680I and E148Q MEFV GENE (Familial Mediterranean Fever Gene) Mutations In The Azerbaijanian Patients |
| | **Closing** |

# INVITED SPEAKERS (IS)

## IS1- THE POWER OF HERBALS AGAINST INFECTIOUS DISEASES

**Erdem Yeşilada**
*Yeditepe University, Faculty of Pharmacy, Istanbul, Turkey*
e-mail: yesilada@yeditepe.edu.tr

Despite current tremendous technical developments, recent COVID-19 pandemic has revealed that man still irremediable against microbial infections. Although the discovery of antibiotics at the mid of the twentieth century provided a limited success against the bacterial and some fungal infections, but unfortunately, we have witnessed that fight against viral infections are still failed. Notably, during the recent two decades, scientific investigations have revealed that many herbals and phytochemicals are found to inhibit the microbial growth or ability to destroy their integrity effectively. Among the phytochemicals, particularly polyphenolics and several volatile components of essential oils have received the attention of the scientific community.
Although their potency in the treatment of microbial infections seems not comparable to antibiotics, they may be applied effectively as prophylactic to reduce the need for antibiotic treatments. This approach would reduce the increased resistant problem to antibiotics.
This study reviews these herbals and phytochemicals with antimicrobial activity and explore their activity mechanisms.

## IS2- Autophagy as a target for disease prevention and treatment

**Devrim Gozuacik**
Koç University Faculty of Medicine, Molecular Biology and Genetics Program and
Koç University Research Center for Translational Medicine (KUTTAM),
Istanbul, TURKEY.
Correspondance: dgozuacik@ku.edu.tr
Web: kuttam.ku.edu.tr/en/team-members/devrim-gozuacik/

Autophagy is key biological event that occurs at low basal levels in all cell types from yeast to mammals under non-deprived conditions, performing homeostatic functions such as protein degradation and organelle (e.g. mitochondria) turnover. It is rapidly upregulated during cellular stress, providing cells with recycled intracellular building blocks and substrates for energy generation and survival.

Autophagy dysregulation plays a critical role in the pathogenesis and progress of several human health problems, including neurodegenerative disorders (i.e. Alzheimer's, Parkinson's and Huntington's diseases), degenerative syndromes (i.e. Dystrophies and dystrophic syndromes), lysosomal storage disorders (i.e. Gaucher's disease), inflammation and cancer.

In our laboratory, we focus on the discovery of novel autophagy regulators and study implications of our findings in human disease pathogenesis and diagnosis (1-5). Moreover, we search for means to modulate autophagy for treatment purposes. In this speech, selected results of our research on autophagy will be discussed.

*References:*

*1) Unal O, Akkoc Y, Kocak M, Nalbat E, Dogan-Ekici AI, Yagci Acar H, Gozuacik Dx. Treatment of breast cancer with autophagy inhibitory microRNAs carried by AGO2-conjugated nanoparticles. J Nanobiotechnology, 2020 Apr 28;18(1): 65. doi: 10.1186/s12951-020-00615-4.*

*2) Ozturk DG, Kocak M , Akcay A, Kinoglu K, Kara E, Buyuk Y, Kazan H and Gozuacik Dx. MITF/MIR211 axis is a novel autophagy amplifier system during cellular stress. Autophagy, 2019, 15(3): 375-390.*

*3) Akkoc Y, Lyubenova L, Grausgruber H, Janovská D, Yazici A, Cakmak Ix and Gozuacik Dx. Minor cereals exhibit superior antioxidant effects on human epithelial cells compared to common wheat cultivars. Journal of Cereal Science, 2019, 85: 143-152.*

*4) Erbil-Bilir S, Gozuacik D, Kutlu Ox. Autophagy as a physiological response of the body to starvation. In the book: Handbook of Famine, Starvation, and Nutrient Deprivation: From Biology to Policy. Victor R. Preedy and Vinood B. Patel (Eds.). Springer Publishing, 2017.*

*5) Erbil S, Oral O*, Mitou G*, Cenk Kig, Durmaz-Timucin E, Guven-Maiorov E, Gulacti F, Gokce G, Dengjel J, Sezerman OU, Gozuacik Dx. RACK1 is an Interaction Partner of ATG5 and a Novel Regulator of Autophagy. The Journal of Biological Chemistry, 2016, 291(32):16753-65.*

## IS3- Microbiota: A New Organ for General Health and Immun System

**Engin ULUKAYA**
Istinye University, Medical School, Clinical Biochemistry Dept. Istanbul, Turkey
E-mail: eulukaya@istinye.edu.tr

Microbiota is a highly exciting and trendy field in medical research. It is refers to ecological communities of commensal, symbiotic and pathogenic microorganisms, including bacteria, fungi, viruses etc. Microbiota make a great impact on both health (immunologic, hormonal and metabolic homeostasis) and some majör diseases (e.g. cancer, obesity, diabetes). The immune system and microbiota may engage in "cross-talk" by exchanging chemical signals, which may enable the microbiota to influence immune reactivity and targeting. Moreover, microbiota can modify the effectiviness/cytotoxic effects of immune checkpoint inhibitors that are life-saving drugs in some well selected patients. The bacteria are able to stimulate lymphoid tissue associated with the gut mucosa, which enables the tissue to produce antibodies for pathogens that may enter the gut. In this talk, the importance of microbiota on general health and some major diseases will be discussed under the recent literature.

## IS4- Boron compounds as immune's-boosting agents

Hasan Turkez
Department of Medical Biology, Faculty of Medicine, Atatürk University, Erzurum, Turkey,
*E-mail: hturkez@atauni.edu.tr*

Boron (B) is a well-known trace element plays key roles in plants and considered as essential for them. B is not considered as essential for humans and animals due to inadequate number of scientific evidences. However, several reports in recent 20 years clearly revealed that B or B-containing compounds exhibit antibacterial, antifungal, antiviral, antioxidant, antimutagenic, anticancer properties as well as immunomodulatory action. A limited number of studies indicate the positive roles of dietary B on immune function via different molecular mechanisms. These mechanisms include (I) modulation of levels of cytokines and interleukins, (II) alteration in serum elemental profile, and (III) stimulation of immune cell proliferation. In this speech, the prominent and forceful signs related to immune responses after different dietary boron supplementations with boric acid and borax on model organisms will be addressed. In addition, the boron containing compounds improving immune system will be introduced with tackling of exposure-dose-response relationships.

*Keywords: Boron supplementation, immunity, immunomodulation*

# IS5- THE CRITICAL IMPORTANCE OF GALECTIN-3 ON THE REGULATION OF INFLAMMATION, CELL PROLIFERATION, AND APOPTOTIC RESPONSE

**Ilhan Yaylim**

Istanbul University, Aziz Sancar Institute of Experimental Medicine, Department of Molecular Medicine, Istanbul-Turkey

E-mail: iyaylim@istanbul.edu.tr ; ilhanyaylim@gmail.com

Galectins are a group of lectins characterized by a galactose-specific carbohydrate recognition domain (CRD) with affinity for beta-galactosides. Galectin-3 is an approximately 30 kDa beta galactoside binding protein which is found in the nucleus, cytoplasm, and cell surface and is also secreted into the circulation. Galectins are important regulators of the immune system as well as promoting pro-inflammatory and anti-inflammatory responses. Gal-3 is the most working member of the galectin family with its chimeric structure and two functional domains. Having several properties of galectin-3 is associated with its differentially localization inside or outside of the cell. Gal-3 regulates the inflammatory response, cell-cell and cell-extracellular matrix relationships at the outside the cell. In addition, Gal-3 ensures cell survival by causing an anti-apoptotic mechanism to occur while controlling alternative splicing and cell proliferation on pre-mRNA inside the cell. It has been demonstrated that Gal-3 expression has critical roles in many diseases such as heart disease, kidney disease, diabetes mellitus, viral infection, autoimmune disease and neurodegenerative disorders, as well as being important as a potential biomarker with clinical value in cancer. In this regard, it has been shown that cytoplasmic Gal-3 in cancer cells, unlike nuclear Gal-3, is often associated with an aggressive phenotype and promotes tumor progression. As a multifunctional protein, galectin-3 plays also a pivotal role in cancer contributing to tumor progression, angiogenesis and metastasis, too. Furthermore, alterations in expression and plasma levels of galectin-3 have been considered as a potential biomarker with clinical value in cancer. Increasing research has been demonstrated that galectin-3 is deregulated in cancer. Our data obtained from our studies on the related genetic variants of galectin-3, gene expression and serum levels made significant contributions to the literature within the scope of risk prediction and disease progression in laryngeal, colorectal and lung cancers. Therefore, it is worthwhile to connect between galectin-3 and the potential clinical value of it as a diagnostic , prognostic biomarker in cancer.

# IS6- Recombinase Polymerase Amplification (RPA)-Based Method and Genetic Obesity Risk Panel

**Umit Zeybek**
Istanbul University, Aziz Sancar Institute of Experimental Medicine, Department of Molecular Medicine, Istanbul-Turkey
e-mail: umz67@yahoo.com

The aim of this research is to develop a recombinase polymerase amplification (RPA)-based method and device to perform it providing as sensitive results as DNA sequence analysis, to detect polymorphisms associated with risk of obesity, and eliminate the high device cost disadvantage of real-time quantitative PCR (qPCR)-based methods. With this project, diseases which could be determined via genetics test panels, like obesity will be studied and this will help the aim of national health technologies sector with contribution to competitive edge and innovative biomedical equipments-systems area.
Besides being an image problem, the main problem of obesity is causing predisposition to diabetes, heart attack, fattening of liver, hypertension, stroke, sleep apnea, infertility and many cancer types. According to 2014 WHO (World Health organization) data, approximately 5% of adult men over 18 years are obese and this number is globally increasing. On the other hand according to Satman I. et al.'s (2013) study, 1 out of 3 people in Turkey is on the edge of being obese. Obesity is a multifactorial disease that has causes of environmental and genetics which differs from 20% to 80%. Several mutations related to obesity predisposition, obesity development and metabolic course of obesity have been determined to scan genetic obesity risks of individuals.
There are different molecular approaches to detect these mutations. Most of these alternatives are based on microarray, next generation sequencing (NGS), polymerase chain reaction (PCR) and classic Sanger DNA analysis. DNA sequencing analysis based methods still have very high cost. DNA sequencing analysis independent Real time quantitative PCR (qPCR) based method is the best cost effective solution to determine limited targeted mutation analysis and this leads to widespread usage of molecular genetic testing. In Turkey, the dependency of qPCR to application expertise and high budget instruments leads to a limitation of studies that could determine the disease risks via genetic test panels, like obesity.
With recombinase polymerase amplification (RPA) method, one can get as precise results as qPCR in only 5-10 minutes. RPA, could be done at only one temperature, unlike qPCR which is done at 3 different temperatures, thus this decreases the instrument costs dramatically. For the first time in literature, in this research a RPA based mutation detection instrument will be developed in Turkey. Another original part of this project is the application of RPA based or DNA amplification based methods for mutation detection of 32 targeted genes related to obesity and develop a comprehensive panel for the first time. Hereby, mutation detection cost will be reduced and this project will lead to widespread application of studies on diseases which can be determined by genetic risk approaches, like obesity.
The PCR and DNA sequencing analysis to SNP analysis of these 32 genes will be done in our laboratories as done routinely and as done in other projects. Relevant genes include mutations and normal genotypes related to obesity predisposition, obesity development and metabolic course of obesity. DNA isolation from peripheral blood will be done via a silica DNA column based method done routinely by our team. RPA reaction components and conditions will be configured as defined by Piepenburg et al. (2015). The instrument which will held the optimized steps will include, data process and control system, single use tube system, temperature control system, fluorescence detection system and peripheral unit and control system. DNA sequence analysis, RPA-based analysis which developed in the project and qPCR-based analysis were applied to 200 whole blood samples. Samples were grouped as 50 patients Non-obese (BMI<25)-Overweight (25≤BMI<30)-Obese (30≤BMI<35)-Morbid obese (35≤BMI).

Nucleic acid (NA) extraction was performed with the robot developed in the project. Results in RPA, qPCR and DNA analyses showed 100% accordance. RPA analysis resulted in 25, qPCR in 55 minutes. RPA method reduced the time required by qPCR by 45%. Since RPA can be performed at a single temperature, analyzes could be concluded with a much simpler device than qPCR.
The effect varies between 0.06-0.4 kg/m² for each BMI enhancing allele associated with SNP. The results were compatible with the literature. Significant correlation was found between the mutation profiles and BMI ($r=0.628$, $p=0.00$; statistical significance $p<0.05$). As a result, for the first time in obesity-related mutation screenings on RPA or DNA amplification, a comprehensive panel in which 32 target genes studied together was created. Thus, by reducing the device costs in mutation screening, the way for a population-based study of diseases considered to have genetic risks including obesity is opened.

# IS7- Natural product derived small molecules as promising chemopreventive interventions in chronic inflammatory diseases

**Tugba Boyunegmez Tumer**
Department of Molecular Biology and Genetics, Faculty of Arts and Science, Canakkale Onsekiz Mart University, Canakkale, 17020 Turkey.
*E-mail: tumertb@gmail.com

Chemoprevention is first descirbed by Sporn et al., 1976, as the use of drugs, vitamins, or other agents to try to reduce the risk of cancer [1]. However, today this term can be also used for the prevention of other diseases like insulin resistance, metabolic syndorme, cardiovascular diseases (CVD), type II diabetes, and Alzheimer's disease (AD)-currently known as type III diabetes. "The unifying early onset molecular mechnanism" or "common seed" of all these disorders including cancer is the development of chronic-low grade inflammation in the microenvironment of the cells, makes these diseases are preventable. Some of the natural compounds due to their multitarget nature, are being found to be very effective for the prevention and mitigation of chronic inflammatory conditions. Studies published with saliciylic acid, a prehistoric phytohormone with strong antiinflammatory action, have provided evidences that long term use of this compound protect against the development of CVD, cancer and AD. Sulforaphane (SFN), an aliphatic isothiocyanate, emerges as a highly potent antiinflammatory phytochemical. A number of clinical trials and epidemiological studies have demonstrated its ability to produce favourable outcomes in the amoliaration and prevention of cancer, type II diabetes and metabolic syndrome. Both salicylic acid and SFN have the potential to modulate the expression of genes associated with redox balance, inflammation and detoxification, all key components of the upstream cellular defence processes. In this talk the cellular molecular mechanisms by which naturally occurring compounds may mediate their chemopreventive effects on chronic inflammatory disease will be discussed by the following specific examples:

- Moringa isothiocyanates: more stable and potent alternative to sulforaphane in disease prevention [2,3]
- Strigolactones, novel phytohormones, with multitarget efficacy in chronic inflammatory diseases [4,5]

***Keywords:*** *Chemoprevetion, chronic inflammation, isothiocyanites, strigolactones, multitarget*

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## IS8- Risk Communication and Community Participation In Pandemic Control

**Secil Ozkan**
Gazi University, Medicinal Faculty, Department of Public Health, Turkey
*E-mail: secilozkan70@gmail.com

Risk communication and community engagement strategy in outbreaks is of great importance in preventing and controlling the spread. There are communication policies that need to be taken into account at different stages of the crisis. The fact that limited health literacy is a public health problem poses a disadvantage for risk communication during the epidemic. The accompaniment of infodemia increases the need for health communication functions in terms of epidemic management. Strengthening of risk communication skills in ensuring the effective participation of society to intervene in epidemic prevention and control is an essential key. This strategy should be planned at global, regional and country level, such as government (including ministries and local governments), national and international non-governmental organizations and academia. Epidemic control for the society's patterns of behavior and perception of risk should be examined, risk communication strategy should be defined.

# IS9- Gender dichotomy on the correlation of immunoglobulin G glycosylation with rheumatoid arthritis disease activity

**Altan Ercan**
Department of Molecular Biology and Genetics, Faculty of Life and Natural Sciences, Abdullah Gul University, Sümer Kampüsü 38080, Kayseri, Turkey
*E-mail:* altan.ercan@agu.edu.tr

Rheumatoid arthritis (RA) affects females more than males. The origin of this gender dichotomy in RA hasn't been well-understood yet. RA is an autoimmune disease diagnosed by the presence of autoantibodies.
Immunoglobulin G (IgG) is produced by the adaptive arm of the immune system and coordinates the collective effort by the adaptive and innate arms for the protection of the host or destruction of the joints in the case of RA. IgG has a conserved complex biantennary N- glycan at the Fc domain with variable structures. This glycan is critical for the function of IgG in modulating the affinity of IgG toward Fc gamma receptors and C1q proteins of the innate arm. Historically, these glycan structures are classified as agalactosylated G0, monogalactosylated G1 and digalactosylated G2 which can be further modified by core-fucosylation (F) and bisecting N-acetylglucosamine (B) moieties such as G0F and G0FB. Interestingly, proinflamatuar G0F is recently shown to be regulated by estrogen in vivo.
Here, the importance of G0F and G0FB glycan structures are investigated with respect to the gender-dependence of RA disease activity (Das28-CRP). G0F and G0FB glycan levels were determined for serum samples from active RA patients (nfemale = 119 and nmale = 107) by High Performance Liquid Chromatography based serum N-glycan analysis. The results show that G0F and G0FB correlate with Das28-CRP3 in female but not in male. Therefore, IgG G0F-and G0FB-dependent inflammation differs in female and male pointing to the differential regulation of inflammation by sex hormones via IgG glycosylation.

# IS10- Food safety risk management in Japan

**Hiroshi Akiyama**
*National Institute of Health Sciences, Kawasaki, Kanagawa 210-9501, Japan*
E-Mail: akiyama@nihs.go.jp

To ensure the food safety, the hazard which is a substance in foods or condition of foods with the potential to cause an adverse health effect should be identified and characterized. The risk to affect the public health is scientifically characterized. The process is called risk assessment. Secondly, risk management should be conducted to reduce the risk if the risk has a potential to affect public health in a risk assessment. Furthermore, risk communication, which is the interactive exchange of information and opinions concerning the risk and the risk management among risk assessors, risk managers, consumers and other interested parties, should be conducted. The Japanese Ministry of Health, Labour and Welfare (MHLW) is in charge of the risk management. MHLW introduced a positive list system for residual agricultural chemicals, such as pesticides, feed additives and veterinary drugs in foods under the Food Sanitation Law . According to the system, if the maximum residue limits (MRLs) of the agricultural chemicals have not been established, the distribution of foods that contain the agricultural chemicals over a certain level is prohibited. To monitor the residual levels of the agricultural chemicals, National Insttitue of Health Sciences (NIHS) developed the analytical methods for the determination of agricultural chemical residues in foods. Dioxins are highly toxic environmental pollutants that are worldwide distributed and found in foods. A total diet study (TDS) is a useful method of estimating the average dietary intake of contaminants. We have conducted a nationwide TDS of dioxins in Japan annually since fiscal year (FY) 1998.
We have estimated the dietary intake of contaminannts such as arsenic (As), cadmium (Cd), mercury (Hg) and lead (Pb) since 1977 using TDS. For food additives, MHLW introduced a positive list system for food additives under the Food Sanitation Law. All food additives are classified into four groups: designated food additives; existing food additives; natural flavoring; and food/food ingredients used as additives in Japan. All designated additives and some existing food additives are currently regulated by certain specifications and/or standards, including those concerning the chemical and physical characteristics of the additive, as well as its manufacturing, storage, and use.

# ORAL Fulltext PRESENTATIONS (OFP)

## OFP1- Determination of Element Levels of Bee Pollen Samples Collected from Domaniç District of Kütahya Province

**Muhammed Alpgiray Çelik[1,2]*, Umran Seven Erdemir[1,3], Erturk Bekar[1,4], Taha Turgut Unal[1,4], Omer Utku Copur [1,4]**

[1]Science and Technology Application and Research Center, Bursa Uludag University, Turkey
[2]Department of Food Hygiene and Technology, Faculty of Veterinary Medicine, Bursa Uludag University, Turkey
[3]Department of Chemistry, Faculty of Arts and Science, Bursa Uludag University, Turkey
[4]Department of Food Engineering, Faculty of Agriculture, Bursa Uludag University, Turkey
*E-mail: alpgiray@uludag.edu.tr

**Abstract:** Defined as male sex cells of flowering plants pollen enables the female organ to pollinate. Pollen is seen during the flowering period of the plants and they start to be collected by honey bees. Pollen is collected from the male organs of the plants with the help of honey bee's mouth, legs and body hard hair[1]. The collected pollen is mixed with digestive enzymes, honey and nectar by the honey bee and stored in pollen baskets on the legs of the 3rd couple and brought to the hive. This compound brought to the hive is defined as bee pollen. Bee pollen is stored by honey bees for later consumption[2]. Bee pollen brought to the hive is collected by humans with the help of pollen traps attached to the entrance of the hive[3].
In this study, the samples were were analyzed using the ICP-MS after microwave digestion at the sample preparation stage in order to determine the element levels and bioaccessbility of the bee pollen samples collected from the Domaniç district in the same year and at different time intervals. The results show that Pb and Cd values defined as toxic heavy metals are below the specified maximum limit values and determined that the bioaccessbility values differ according to the sample and elemental level.
Keywords: bee pollen, element, bioaccessibility, ICP-MS

**Introduction:** Bee pollen is used as an important food supplement in human nutrition, as it has a rich content in protein, carbohydrate, amino acids, lipids, sterols, terpens, phenolic substances and vitamins[2,4]. It is even called 'perfect whole food' because it contains all essential amino acids[5]. In studies on bee pollen, it has been reported that it has antimicrobial, anti-inflammatory, antitumoral, antifungal, antioxidant, antiprostatic, antianemic, antiatherosclerotic, antiosteoporosis, antiaging, antidiarrheal, antiallergic, probiotic and liver protective effects depending on the source of the bee pollen [2,6]. Bee pollen contains 500-3000 mg of mineral matter per 100 grams (Bogdanov, 2006). Daily mineral requirement in human nutrition; Ca: 0.8-0.9 g, P: 0.8-1.2 g, K: 800 mg, Mg: 300-400 mg, Mn: 4-5 mg, Fe: 10-20 mg, Zn: 6 -22 mg, Cu: 1-3 mg, Se: 60-120 µg, Ni: 15-25 µg (Demirci, 2014; Tayar and Cıbık, 2011). It is known that bee pollen contains toxic elements as well as its nutritious content[7,8]. Bee pollen a bioindicator of the environment, including the atmosphere and pollution[9].

**Materials and Method:** Bee pollen samples were collected from 10 colonies of *apis mellifera anatoliaca* located in the same location in Domaniç district of Kütahya province, using a pollen trap 4 times with 7 days intervals (n = 4). Sample collection times; BP-1 27 June 2020, BP-2 4 July 2020, BP-3 11 July 2020, BP-4 18 July 2020. The collected samples were kept at room temperature for 7 days to reduce the moisture content and then stored at +4°C until analysis. For total element determination, samples (400 mg) were subjected to microwave digestion (Milestone ETHOS UP) with $HNO_3$ (8 mL) and $H_2O_2$ (2 mL). Digested samples were transferred to polypropylene centrifuge tubes and diluted to 25 mL with 1% $HNO_3$. Before analysis by ICP-MS (Perkin Elmer NEXION 350 ICP-MS) filtered through PVDF syringe filters (0.45 µm × 33 mm; Millipore Corp., Bedford, MA, USA). For bioaccessbility determination, 0.2 g of sample, 10 mL of water, 4 mL of pepsin-HCl and 5 mL of pancreatin-bile solutions were used (Erdemir and Gucer 2016). After adjusting the pH to 1.9 using 0.1 M HCl, the samples were incubated at 37°C for 1 h with 120 rev/min in a stirred water bath using 4 mL of pepsin, then samples was adjusted to 6.9 with 0.1 M NaHCO3. 5 mL of pancreatin-bile solution was added to samples and incubated

at 37°C for 2 h with 120 rev/min in a stirred water bath (Erdemir and Gucer, 2013). The resulting samples were centrifuged (HITACHI CF15RN) at of 1500xg for 5 min.

**Results and Discussion:** Some of the method performance characteristics are shown in Table 1. Pb, Ba, Ni, Mo, Sr, Cd, Co, Fe, Mn contents and bioaccessibility of bee pollens collected at different sampling times are shown in Table 2.

**Table 1.** Method performance characteristics

| **Element** | **LOD** (µg / g) | **Certified Values of Reference Material** (mean±sd) (µg / g) | **Measured Elemental Levels** (mean±sd) (µg / g) |
|---|---|---|---|
| **Pb** | 0,001 | 4,4 ± 0,3 | 4,3 ± 0,1 |
| **Ba** | 0,001 | 58 ± 6 | 56 ± 2 |
| **Ni** | 0,005 | 4,6 ± 0,5 | 5,4 ± 0,2 |
| **Mo** | 0,001 | 0,038 ± 0,007 | 0,039 ± 0,01 |
| **Sr** | 0,003 | 15,2 ± 0,7 | 15,8 ± 0,5 |
| **Cd** | 0,001 | 0,057 ±0,01 | 0,057 ± 0,01 |
| **Co** | 0,001 | 0,18 ± 0,02 | 0,17 ± 0,01 |
| **Fe** | 0,138 | 264 ±15 | 248 ± 9 |
| **Mn** | 0,024 | 1240 ± 70 | 1153 ± 23 |

**Table 2**. Elemental and bioaccessibility analysis results

| **Sample** | **BP-1** | | **BP-2** | | **BP-3** | | **BP-4** | |
|---|---|---|---|---|---|---|---|---|
| **Element** | (mean±sd) (mg/kg) | bioaccessibility (%) | (mean±sd) (mg/kg) | bioaccessibility (%) | (mean±sd) (mg/kg) | bioaccessibility (%) | (mean±sd) (mg/kg) | bioaccessibility (%) |
| **Pb** | 0,40±0,02 | 0,61 | 0,40±0,02 | 4,08 | 0,41±0,01 | 0,66 | 0,40±0,02 | 2,4 |
| **Ba** | 1,06±0,04 | 35,7 | 1,52±0,09 | 20,04 | 2,00±0,04 | 1,7 | 2,46±0,07 | 1,3 |
| **Ni** | 3,28±0,17 | 66,5 | 3,02±0,26 | 39,38 | 5,48±0,27 | 22,3 | 4,03±0,27 | 27,4 |
| **Mo** | 0,16±0,02 | 100 | 0,28±0,02 | 100 | 0,55±0,03 | 63,6 | 0,45±0,04 | 68,1 |
| **Sr** | 2,11±0,15 | 37,9 | 2,06±0,25 | 61,2 | 3,12±0,04 | 36,2 | 5,67±0,71 | 18,8 |
| **Cd** | 0,027±0,004 | 6,82 | 0,03±0,01 | 10,78 | 0,02±0,01 | 12,2 | <LOD | <LOD |
| **Co** | 0,05±0,01 | 89,1 | 0,06±0,01 | 72,7 | 0,07±0,01 | 38,2 | 0,11±0,02 | 13,0 |
| **Fe** | 56,9±4,57 | 43,3 | 70,73±7,03 | 16,1 | 93,99±3,43 | 7,58 | 117,17±10,93 | 0,41 |
| **Mn** | 17,61±0,99 | 100 | 40,91±3,53 | 26,6 | 45,54±0,79 | 5,97 | 30,58±1,53 | 5,34 |

It has been reported that, the heavy metal content in bee pollen should not exceed the amounts of; Cd: 0.03 mg/kg, Pb: 0.5 mg/kg, kg (Maria G. R. Campos at all, 2015). The results show that the levels of Pb and Cd that were defined as toxic heavy metals were below the specified maximum limit value. Some bee pollens produced in the sampled area contain toxic metals at concentrations of below allowable levels. Some levels also were under detection levels. Fe and Mn values were found to be higher than other minerals. Bioaccessibility levels of Pb and Cd were determined to be low. Mo and Co were found to have the highest bioaccessibility levels. The bioaccessibility of Mo and Mn elements in BP-1 and Mo elements in BP-2 were determined as 100%. The change in bioaccessbibility levels may be due to bee pollen's chemical composition and botanical origin.

**Conclusion:** This study reported the total levels and bioaccessibility of elements of bee pollen at different sampling periods. Bee pollen could be exposed to environmental pollutants and may

contain heavy metals such as cadmium and lead in certain proportions. For this reason, the production of bee pollen should be controlled to be free of environmental pollutants and heavy metal contents before being presented to human consumption.

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# ORAL PRESENTATIONS (OP)

## OP1- Dark-field hyperspectral microscopy for label-free fly ash and microplastic particles imaging and identification

**Läysän Nigamatzyanova and Rawil Fakhrullin***

*Bionanotechnology Lab, Institute of Fundamental Medicine and Biology, Kazan Federal University, Kreml uramı 18, Kazan, Republic of Tatarstan, Russian Federation, 420008*

*E-mail: kazanbio@gmail.com

Pollution with microscale and nanoscale particles, such as microplastic and fly ash, is a serious ecological threat, severely affecting environments and human health. Addressing this issue requires an effective methodology to detect low amount of fly ash and polymer particles in cells, live organisms and environmental samples (e.g. wastewater, sediments, etc.). In this talk we introduce a novel methodology to visualise and identify nanoscale (down to 100 nm) and microscale fly ash and synthetic polymer particles based on dark-field hyperspectral microscopy in visible and near infrared (400 nm -1000 nm) wavelength range. Fly as particles from various sources and polystyrene particles with diameters between 100 nm – 1 μm, polymethacrylate 1 μm and melamine formaldehyde 2 μm microspheres were visualised and chemically detected based on spectral signatures and image-assisted analysis. We performed visualisation and spectral identification of fly ash particles and pure and mixed nano- and microplastics in vivo employing Caenorhabditis elegans nematodes. This nematode was employed

as a model to demonstrate the ingestion and tissue distribution of fly ash particles and microplastics. Dark-field hyperspectral microscopy was applied for differentiating between chemically-different fly ash particles and microplastics confined within live invertebrate intestines. We also report that this optical technology can be used successfully for quantitative identification of microplastics in nematodes. This label-free non-destructive methodology will find numerous applications in environmental fly ash and microplastics detection and quantification.

# OP2- A Novel Gene Delivery Method for Transformation of Yeasts Used in the Production of Biopharmaceutical Proteins

**Şeyda Yıldız[1*], Kübra Solak[2], Melek Acar[1], Yağmur Ünver[1], Ahmet Mavi[2]**

[1]Department of Molecular Biology and Genetics, Faculty of Science Ataturk University, Erzurum, Turkey

[2] *Department of Nanoscience and Nanoengineering, Institute of Science, Ataturk University, Erzurum, Turkey**E-mail:

*E-mail: seyda.yildiz12@ogr.atauni.edu.tr

The pharmaceutical industry uses kinds of hosts to produce biological materials such as monoclonal antibodies and recombinant proteins in high amounts. To obtain effective and safe therapeutic materials for human, post-translational modifications is the most important issue[1]. Yeasts, unicellular eukaryotic microbial host cells, offer unique advantages in producing biopharmaceutical proteins such as being generally recognized as safe organisms, suitable for genetic manipulations, providing desired post-translational modifications and the ability to produce proteins on a large scale[2].

Up to now, spheroplast, LiCl-heat shock, electroporation, glass bead method and biolistic transformation methods have been used for gene delivery to yeasts. Besides their various advantages, these methods also have many disadvantages such as making the cells competent, using high amounts of DNA, requiring extra carrier such as salmon sperm DNA and expensive equipment, having long and tiring transformation process, and low transformation efficiency[3]. Therefore, in this study, it was aimed to suggest a novel gene delivery protocol to yeast cells that has high transformation efficiency, low cell toxicity, minimal adverse effect on the recipient cells, and is also easy to use and reproducible.

Firstly, 20 nm of iron oxide magnetic nanoparticles ($Fe_3O_4$@PEI MNPs) were synthesized, characterized by TEM, XRD, and FTIR, and then combined with a plasmid DNA containing the reporter gene. It was noticed that $Fe_3O_4$@PEI MNPs have high DNA-loading capacity. MNPs/DNA complex was used for the first time for gene delivery to *Pichia pastoris* yeast, which is frequently used in recombinant protein production. Cellular uptake of MNPs/DNA complex obtained under optimum conditions was accelerated using a magnet.

The results showed that yeast transformation may be achieved in less than two hours by the suggested approach. It has been observed that there is no need for an extra carrier for the integration of recombinant DNA to the yeast genomic DNA. Also, the successful transformation was achieved despite using 5-10 times less linear recombinant plasmid DNA (1 µg) compared to conventional methods.

Consequently, genes of medically important antibodies, proteins, and peptides can be delivered to yeast cells by magneto-transformation which we recommend as a fast, easy, and inexpensive way and they can be expressed in high levels.

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**Keywords**: biopharmaceuticals; recombinant protein; magnetic nanoparticles; gene delivery; *Pichia pastoris*

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# OP3- Synthesis of Magnetic Nanoparticles for Biomedical Applications and Their Use in Magnetic Hyperthermia

**Melek Acar[1*], Kübra Solak[2], Saadet Kalakenger[1], Şeyda Yıldız[1], Yağmur Ünver[1], Ahmet Mavi[2]**

[1]*Department of Molecular Biology and Genetics, Faculty of Science, Ataturk University, Erzurum, Turkey*

[2] Department of Nanoscience and Nanoengineering, Institute of Science, Ataturk University, Erzurum, Turkey

*E-mail: melek.acar12@ogr.atauni.edu.tr

Increasing cancer cases have led to the use of many different approaches against cancer such as chemotherapy, immunotherapy, radiotherapy, etc[1]. One suggested therapy is hyperthermia which is the process of heating a tissue/cells to 39-45 °C using radiofrequency waves, light, or magnetic field[2]. Oncological studies show that combining two or more of these therapies may cause a more reliable, effective, and higher response compared to monotherapies[3].

Magnetic hyperthermia (MHT) is a very promising treatment for a variety of cancers due to its ability to increase the sensitivity of cells to other treatments such as chemotherapy[2]. In addition, hybrid systems (such as Hybrid-System Sigma-Eye/MRT) are developed in which treatment (MHT) and imaging (magnetic resonance) can be performed with the same device[2,4]. Magnetic nanoparticles (MNPs), especially superparamagnetic, are used for these purposes which might reach the target rapidly with the help of a magnet. When the MNP-treated area is kept under AFM, the MNPs convert electromagnetic energy into heat and the area heats up in this way[5].

To enhance the potential of MHT for cancer therapy, MNPs must be able to effectively accumulate at tumor sites and generate desired intra-tumoral temperatures after exposure to an AMF. Therefore, it was aimed to develop MNPs with high heating capacity and low cytotoxicity in this study. Firstly, MNPs containing iron or zinc were produced, and then they were modified with silica or polyethyleneimine. MNPs were characterized by TEM and SEM. The effects of the MNPs on cell proliferation and cytotoxicity were investigated on MCF7 and MCF-10A cells. Also, the heating capacity of MNPs was investigated by the MHT device (MSI Automation Hyper-5).

As a result of our study, it was observed that the size, content of the magnetic core and silica coating thickness are important in MHT. It was determined that PEI coated MNPs cause faster temperature increase, but considering the cytotoxicity results, silica-coated MNPs containing iron are more ideal in MHT applications.

In our ongoing studies, the MHT method will be combined with gene therapy and it will be investigated whether a more effective cancer treatment can be developed with low dose applications.

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**Keywords**: multiple therapies, cancer, magnetic nanoparticles, magnetic hyperthermia

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# OP4- Determination of the elemental content of Tagetes erecta by ICP-MS and investigation of the potential effects on the organism by in-vitro digestibility studies

**Taha Turgut Unal[1,2], Ertürk Bekar[1,2], Umran Seven Erdemir[3,2], Arzu Akpınar Bayızıt[1,2], Perihan Yolci Omeroglu[1,2], Ö. Utku Çopur[1,2]**

[1]Bursa Uludag University Faculty of Agriculture, Food Engineering Department, 16059, Bursa, Turkey
[2]Science and Technology Application and Research Center of Bursa Uludag University, 16059 Bursa, Turkey
[3]Bursa Uludag University Faculty of Arts and Sciences, Chemistry Department, 16059, Bursa, Turkey
*E-mail: tahaunal@uludag.edu.tr

Foods or ingredients that are scientifically and clinically proven to have positive effects on health are defined as "functional foods". These ingredients can be found as a natural component of food or added to food during processing. In addition to their contribution to sensory properties in traditional foods, edible flowers, which are considered functional foods due to their positive effects on health, have been the focus of many studies in the field of food science and pharmacology. These plants are natural resources that are also used in pharmacological medicines due to their health effects[1-2].

Studies on edible flowers have focused on bioactive components, which play an important role in various metabolic processes, and their antioxidant and antimicrobial properties. However, there is limited information about the mineral profile, which is necessary for the organism to maintain health and contribute to vital functions in various biochemical processes[3-5].

Narai, Eagle, Bali Yellow, Bali Orange, Marvel Yellow, and Marvel Orange varieties of *Tagetes erecta*, known as "Marigold" among the public. In this study, Perkin Elmer NEXION350 ICP-MS is used for analyzing the mineral profile of *Tagetes erecta.* Essential or toxic elemental contents of this edible flower have been determined for this purpose. As the nutritional value of the element in foods is based on the total element content as well as its bioavailability or bioaccessibility, in-vitro digestibility studies with enzymes were also performed to evaluate their potential effects on the organism.

**Keywords**: *Tagetes erecta*, edible flower, element, in-vitro digestibility, ICP-MS

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## OP5- How Our Microbiata Affects Our Life?

**M. Kerem Ozyavuz, Faruk Çelik**
Istanbul University, Aziz Sancar Institute of Experimental Medicine, Department of Molecular Medicine, Istanbul-Turkey
*E-mail: mustafa.ozyavuz@saglik.gov.tr ; mkeremo@hotmail.com

Microbiata simply meanss all microorganisms that live in our body. Our body consists 30-40 trillion cells but 80% of them are eritrocites and they don't have genetic materials,though microbiata consits 3-4% percent of body mass has 10 times more number of cells and 100 times more genes. Microbiata settling in 90% of gastrointestinal system especially in gut but also skin, noise, respiratory track and genitourinary track. Microbiata formation begins from birth and changes continues in all lifetime of being.

80% of daily antibody production is made by lenfoid tissue under the gut mucose called; GALT (Gut-Associated-Lymphoid-Tissue) and MALT (Mucosa-Associated-Lymphoid-Tissue) that consists respiratory and urogenital tract.

Bowels contains almost same number of nourons in Brain and thats why it is called second brain. Almost 50% of of human microbiata is same but other 50% changes acording to environment, culture, antibiotics, and diet. Microbiata is our interior ecosystem that controls our body functions and when it get spoiled like leaky gut we begin to have different kind of diseases bacuse of immune deficiency.

Antibiotics are highly interactive with microbiata also they have side effects that makes diarrhea and loss of useful bacteries. When the balance is broken between bacteries in bowels people get susceptible for chronic inflammatory disaeses. Hipersensitive raections may occur. Allergic reactions are easly determines in this patients. SIBO (Small İntestinal Bacterial Overgrowth) is a syndrome that can be determine in this patients.

Healthy life is only possible with health microbiata as the Hypocrat says "Diseases begins from intestines, if the intestines is sick the rest of body is sick."

# OP6- ALD Coated Polypropylene Mesh to Prevent Mesh-Related Post-Surgery Complications for Hernia Repair

**Ilmutdin M. Abdulagatov[1,2,*], Razim M. Ragimov[1], Magomed A. Khamidov[1], Naida R. Abdullaeva[1,2], Abai M. Maksumova[1], Suleiman N. Mammaev[1]**

[1]Dagestan State Medical University, Makhachkala, Dagestan, Russian Federation
[2]Dagestan State University, Makhachkala, Dagestan, Russian Federation
*E-mail: ilmutdina@gmail.com

The number of mesh materials used by surgeons for hernia repair rapidly expanding. However, still there are large number of mesh-related complications such as infection, fibrosis, adhesions, mesh rejection, and hernia recurrence [1]. Different mesh material types are associated with specific complications. Researchers have focused on the analysis and implementation of a wide range of materials: meshes with different fiber size and porosity, a variety of manufacturing methods, and certainly a variety of surgical and implantation procedures [2]. Currently, surface modification methods and development of nanofiber-based systems are actively being explored as areas of opportunity to retain material strength and increase biocompatibility of available meshes. Polypropylene mesh implantation is one of the most frequently performed surgeries in the world. However, many biocompatibility issues remain to be a concern for hernioplasty, with chronic pain being the most notable postoperative complication [3-5]. Lack of material inertness and oxidative environment formed by inflammatory cells result in both mesh deterioration and slowed healing process. Oxidative stress is a major factor in the development of those complications. Unfortunately, currently utilizing surgical meshes are not exhibiting all of the desired characteristics. Therefore, the present work efforts focus on providing potential solutions of the problem by using novel nano- materials that could improve existent shortcomings.

The main purposes of the present work are to give the hernia mesh surface favorable biological properties by modification of surface chemistry and nanostructural morphology using Atomic Layer Deposition (ALD) coating technology [6]. The application of a nanostructured $Ali_2O_3$, $TiO_2$, and $V_2O_5$ coating on polypropylene hernia mesh has been proposed as a potential way to enhance tissue-mesh interactions while inhibiting bacterial colonization simultaneously due to chemical stability, biocompatibility, and antibacterial activity properties. In the present work, low-temperature ALD was used for the first time to provide multi-nano-layer coating of $Ali_2O_3$ (10 nm), $TiO_2$ (9 nm), and $V_2O_5$ (9 nm) on polypropylene hernia mesh surface. The present study showed that $Ali_2O_3$ +$TiO_2$ / $V_2O_5$ -coated polypropylene mesh was associated with less postoperative complications compared with the no coated polypropylene mesh. Nano- $Ali_2O_3$ +$TiO_2$ / $V_2O_5$ coating inhibits various type of bacteria without use of antibiotics. We have found that ALD-grown $Ali_2O_3$ +$TiO_2$ / $V_2O_5$ coated hernia mesh shows promising antibacterial properties. ALD method provides a novel and effective way to produce antibacterial coating with accurate control of the mesh surface morphology to enhance the interfacial biocompatibility and mitigate bacterial infection and can be used to improve existing polypropylene mesh implant.

We have prepared and characterized polypropylene hernia meshes with $Ali_2O_3$ +$TiO_2$ / $V_2O_5$ –coated using ALD technique. The results of that study supported the use of coated mesh as potential to considerable alleviate post-surgical inflammation. In the present work we verified advantage of the use of the surface modified polypropylene hernia meshes on animal test where we implanted coated and uncoated mesh into abdominal walls of rabbits. Histology of the mesh-adjacent tissues and SEM of the explanted mesh surface were performed to characterize host tissue response to the implanted meshes. The present results showed that $Ali_2O_3$ +$TiO_2$ / $V_2O_5$ – coated mesh considerable reduced prevent mesh-related post-surgery inflammation. The $Ali_2O_3$ thin film were deposited onto the polypropylene mesh using $Al(CH_3)_3$ –three methyl aluminum and water, while $TiO_2$ and $V_2O_5$ were deposited on the same sample of polypropylene mesh using $TiCl_4$ and $VOCl_3$ and $H_2O$ as a ALD precursors. Nitrogen was used as a purging gas. In the present study a standard ALD cycles consisted of a 0.8 sec exposure to $Al(CH_3)_3$ , 45 sec purging time, 1 sec exposure to $H_2O$ and 45 sec purging time. For alternate deposition of $TiO_2$ and $V_2O_5$ nanofilms, ALD cycles consisted of a 1 sec exposure to $TiCl_4$, 30 sec purging time, 1 sec exposure to $H_2O$, 30 sec purging time, 0.5 sec exposure to $VOCl_3$, 30 sec purging time, 1 sec

exposure to $H_2O$, 30 sec purging time. The nanofilm of $Ali_2O_3$ +$TiO_2$ / $V_2O_5$ was grown at a temperature of (85 to 95) °C. A total of 100 cycles corresponding approximately to 10 nm of the $Ali_2O_3$ film and 150 cycles corresponding approximately to 18 nm of the $TiO_2$ / $V_2O_5$ film were performed.

***Keywords:*** *atomic layer deposition, anti-inflammatory coating, hernia mesh, nanofilm*

***Acknowledgments***
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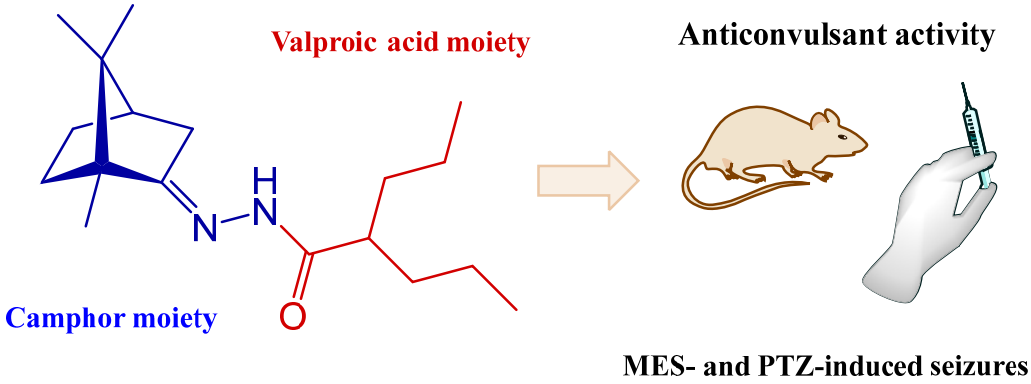
## OP7- Anticonvulsant activity of hydrazone based on (+)-camphor and valproic acid

**Mariia Nesterkina , Iryna Kravchenko**
Department of Organic and Pharmaceutical Technologies, Odessa National Polytechnic University, Odessa 65044, Ukraine
*E-mail: mashaneutron@gmail.com

The present study is focused on enhancing the anticonvulsant properties of valproic acid (medications used to treat epilepsy) via its conjugation with bicyclic terpenoid camphor through azomethine bond followed by hydrazone formation. Synthesis of aforementioned compound was carried out by Schotten-Baumann reaction consisting in (+)-camphor hydrazide condensation with valproic acid (VPA) chloride. The structure of obtained derivative was reliably analyzed with Raman, FT-IR, $^{1}$H-NMR and $^{13}$C-NMR spectral analysis along with FAB-mass spectrometry[1].




In order to evaluate the anticonvulsant effect of camphor hydrazone the following pharmacological models have been applied: pentylenetetrazole- (PTZ) and maximal electroshock (MES)-induced seizures. The compound was administered into mice orally in a dose of 100 mg/kg; antiseizure action was determined at 3 h and 24 h after administration. In PTZ test minimum effective doses (MED) that provoke clonic-tonic convulsions (DCTC) and tonic extension (DTE) were registered[2]. According to our data, synthesized derivative was found to demonstrate the seizure protection over a long time period (24 h after administration) with the average values: 277% for DCTC and 238% for DTE compared with control group (100%). Interestingly, camphor hydrazone substantially prevented animals' mortality in MES test manifesting 80% and 100% protection at 3 h and 24 h after administration, accordingly.
Thus, here we showed the strategy for increasing the VPA anticonvulsant activity by its chemical bonding with terpenoid camphor. The effectiveness of this approach has been confirmed based on pharmacological investigation, namely, by models of chemical- and electrical-induced seizures. Prolonged action of synthesized compound deserves special attention since it reflects the possible enzymatic cleavage of labile bonds (C=N, N–NH or CO–NH) in hydrazone molecules followed by gradual release of pure terpenoid and VPA.

**Keywords**: valproic acid, camphor, hydrazone, synthesis, anticonvulsant effect

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# OP8- Determination of Element Levels of Bee Pollen Samples Collected from Domaniç District of Kütahya Province

**Muhammed Alpgiray Çelik[1,2*], Umran Seven Erdemir[1,3], Ertürk Bekar[1,4] Taha Turgut Unal[1,4], Ömer Utku Çopur [1,4]**

[1]Bursa Uludağ Üniversitesi, Bilim ve Teknoloji Uygulama ve Araştırma Merkezi, Bursa, Türkiye
[2]Bursa Uludağ Üniversitesi, Veteriner Fakültesi, Besin Hijyeni ve Teknolojisi Anabilim Dalı, Bursa, Türkiye
[3]Bursa Uludağ Üniversitesi, Fen Edebiyat Fakültesi, Kimya Bölümü, Bursa, Türkiye
[4]Bursa Uludağ Üniversitesi, Ziraat Fakültesi, Gıda Mühendisliği Bölümü, Bursa, Türkiye
*E-mail: alpgiray@uludag.edu.tr

Defined as male sex cells of flowering plants, pollen enables the female organ to pollinate. Pollen is seen during the flowering period of the plants and they start to be collected by honey bees when the air temperature is above 14 °C. Pollen is collected from the male organs of the plants with the help of honey bees' mouth, legs and body hard hair[1]. The collected pollen is mixed with digestive enzymes, honey and nectar by the honey bee and stored in pollen baskets on the legs of the 3rd couple and brought to the hive. This compound brought to the hive is defined as bee pollen. Bee pollen is stored by honey bees for later consumption[2]. Bee pollen brought to the hive is collected by humans with the help of pollen traps attached to the entrance of the hive[3].

Bee pollen is used as an important food supplement in human nutrition, as it has a rich content in protein, carbohydrate, amino acid, lipid, sterol, terpene, phenolic substances and vitamins[2,4]. It is even called 'perfect whole food' because it contains all essential amino acids[5].

In studies on bee pollen, depending on the source of the pollen, it has been reported that it has antimicrobial, anti-inflammatory, antitumoral, antifungal, antioxidant, antiprostatic, antianemic, antiatherosclerotic, antiosteoporosis, antitumoral, immundulatory, antiaging, antidiarrheal, antiallergic, probiotic and liver protective effects [2,6].

In this study, in order to determine the element levels of the bee pollen samples collected from the Domaniç district in the same year and at different time intervals, the samples were subjected to microwave digestion at the sample preparation stage and were analyzed using the Perkin Elmer NEXION 350 ICP-MS device. In order to determine the bioavailability of total elemental levels, in-vitro studies were carried out by simulating gastric and intestinal sequential digestion in the organism in terms of temperature, pH and digestion time. Analytical validation parameters were examined, especially for accuracy and reproducibility, and other key validation parameters were determined. It is predicted that the results obtained from our study will contribute to the evaluation of the wide-ranging elemental benefit-harm relationship of pollen samples defined as excellent whole food.

Keywords: bee pollen, element, ICP-MS

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# OP9- Determination of Physico-Chemical and Sensory Properties of Beef Salami Using Different Microalgae in Production

**Nalan Çırak[1,2], Arzu Akpınar Bayizit[1,3], Kader Çetin[1,4], Muhammed Alpgiray Çelik[1,5*], Ertürk Bekar[1,3]**

[1] Bilim ve Teknoloji Uygulama ve Araştırma Merkezi, Bursa Uludağ Üniversitesi, Bursa, Türkiye
[2] Gıda İşleme Bölümü, Teknik Bilimler Meslek Yüksek Okulu, Bursa Uludağ Üniversitesi, Bursa, Türkiye
[3] *Gıda Mühendisliği Bölümü, Ziraat Fakültesi, Bursa Uludağ Üniversitesi, Bursa, Türkiye*
[4] *Gıda İşleme Bölümü, Karacabey Meslek Yüksek Okulu, Bursa Uludağ Üniversitesi, Bursa, Türkiye*
[5] *Besin Hijyeni ve Teknolojisi Anabilim Dalı, Veteriner Fakültesi, Bursa Uludağ Üniversitesi, Bursa, Türkiye*
*E-mail: ncirak@uludag.edu.tr

Per capita consumption of meat and meat products is one of the basic criteria in determining the development and development levels of countries[1-3]. In the preparation of meat products, additives such as texture improvers, thickeners, antimicrobials, color and texture improvers and shelf life enhancers are used to obtain suitable for instant consumption,. When consumed excessively, the additives can cause health risks due to cholesterol and their composition, and have been associated with diseases such as cancer, obesity, type 2 diabetes, cardiovascular diseases and hypercholesterolemia[4]. Conscious consumers are showing an increasing interest in healthy meat and meat products with improved composition with reduced fat, cholesterol, salt levels and additives free by adding ingredients that can add value to a healthy life.
Studies conducted on the fact that plant foods reduce the risk of chronic diseases such as cardiovascular, neurodegenerative and cancer have led researchers to include alternative nutritional ingredients of plant origin in meat products. Thus, they are frequently used in meat products as they are health-beneficial, low-cost and cholesterol-free protein analogues such as vegetable-derived soy protein, wheat proteins, microalgae extracts and various fruit and vegetable flours[4-5].
In this research, beef sourced minced meat; physico-chemical (moisture, protein, oil, ash, pH, color, texture) and sensory properties of salami produced by adding microalgae extracts of Spirulina and Chlorella genus were determined. As a result of the findings, their acceptability as an innovative, sustainable, functional product has been revealed.
Eliminating the negative perception towards meat products and meeting sensitive consumer demands is only possible with the development of innovative, functional and sustainable products with changed content and ratios.

*Keywords: salami, protein analog, spirulina, chlorella*

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## OP10- Comparison of Extraction Methods on the Fatty Acid Profiles of Tagetes erecta

**Ertürk Bekar*, Arzu AKPINAR BAYIZIT, Kader CETIN, Perihan YOLCI OMEROGLU**
*BITUAM, Bursa-Turkey
*E-mail: erturkbekar@gmail.com

Aside being a part of daily life in terms of social, cultural, and as ritual symbols edible flowers has recently gained popularity as a creative and innovative ingredient in the culinary arts. Many flowers such as jasmine, rose and purple violet have been used in various dishes, salads, food and beverages due to their flavour, aroma and colour. The ongoing interest on their use in meals has been shifted towards their importance as nutritious components of the diet, having many phytochemicals with bioactive potential and health benefits. Hence, in recent years, nutraceutical studies focused on the health effects of edible flowers or their components with rich pigmentation and high antioxidant activity.

*Tagetes erecta* (Marigold) belongs to the Asteraceae family, and is an annual edible flower genus with its yellow, orange and red hues that grow widely in Mexico, Central America and India. However, it is a herbaceous ornamental plant widely grown in the world for hobby and commercial purposes. In addition to its usage of seasonal flower in parks and gardens or as a coloring agent in the feed and food industry; it is also used as a biological control agent, medicinal aromatic plant and a fragrance component in cosmetic industry. Its flowers are mostly consumed as vegetables or for decoration in desserts.

The research on *Tagetes erecta* have centred on antioxidant properties, chemical constituents and phytochemical characterization, in particular the potential use of seed oil as an active ingredient in dietary supplements for preventing and treating diseases such as inflammation and cancer.

Although there are reports on its lutein content, volatile compounds and phenolic composition of marigold, there is no study examining the fatty acids of flower petals. Therefore, the present work was carried out to determine the fatty acid profile of Bali Yellow and Bali Orange varieties, and concurrently understand the effect of hot- and cold-extraction methods on fatty acid content using GC-FID.

***Keywords***
*Edible flower, Fatty acids, Tagetes erecta, Bali Yellow, Bali Orange*

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# OP11- In silico analysis of human microbiota-related key genes and molecular pathways in colorectal adenocarcinoma

**Dilek Pirim[1,3*], Berkcan Doğan[2,3], Cemre Örnek Ergüzeloglu[3], Adem Alemdar[3], Şehime Gülsün Temel[2,3,4]**

[1]Bursa Uludag University, Faculty of Arts & Science, Department of Molecular Biology and Genetics, Bursa, Turkey
[2]Bursa Uludag University, Faculty of Medicine, Department of Medical Genetics, Bursa, Turkey
[3]Bursa Uludag University, Institute of Health Sciences, Department of Translational Medicine, Bursa, Turkey
[4]Bursa Uludag University, Faculty of Medicine, Department of Histology and Embryology, Bursa, Turkey
*E-mail: dilekpirim@uludag.edu.tr

Growing evidence has revealed several associations between alterations in human microbial composition and colorectal cancer (CRC). However, utilizing the results of human microbiome research into the translational applications is still challenging due to the inter-individual variation in the human genome, which also shapes and affects the microbial functions within the human holobiont. Thus, the interplay between host genetics and alterations in the human microbiota requires further investigation.

We used the Disbiome database to extract the microbiome genera that vary between cases with colon adenocarcinoma (COAD) and healthy controls, and their interactions with human genes and related functions in molecular pathways were identified by using multiple bioinformatics tools. Taxon Set Enrichment Analyses (TSEA) was performed by using MicrobiomeAnalyst to find their association with host genes. We further used the Gene Expression Profiling Integrative Analyses (GEPIA) webserver to explore the expressions of the identified genes in the COAD-TCGA data set. Protein-protein interactions were analyzed by the STRING database. Functional enrichment analyses were conducted by NetworkAnalyst.

A total of 10 bacterial genera were identified to be associated with COAD of which 6 were elevated and 4 were reduced based on the quantitative data in the Disbiome database. TSEA was achieved for two groups (elevated & reduced taxons) and 34 significant genes ($P<0.05$) were predicted to be associated with microbial groups. The top significant KEGG term that includes the genes associated with elevated and reduced taxons was bile acid synthesis. Among these genes, three genes (SLC45A1, PNPLA7, LGI4) which were found to be associated with taxons elevated in COAD were also differentially expressed [log2FC<-1.5, q-value<0.01] in the COAD/TCGA data set. PNPLA7, which is known to play a crucial role in energy metabolism, was also found to be significantly associated with the overall survival of COAD patients in the TCGA data. These genes were suggested to be putative microbiota-related key genes and their associations with CRC-associated microbiota should be further investigated.

Our results offer in silico evidence for candidate key genes and molecular pathways that may contribute to the microbiome-associated CRC and have potential roles in oncomicrobiome research. Follow-up experiments are planned to confirm the findings and will ultimately provide a new perspective for translational applications in CRC management.

Key words: Microbiome, Colorectal cancer, host-microbiome interaction, epigenetic

# OP12- Determination of quality parameters for the aerial parts of Cistus creticus L. used as a medicinal herbal drug

**Etil Güzelmeriç, Yiğit İnan, Nisa Beril Şen, Parla Işıl Yüksel, Erdem Yeşilada**
Yeditepe University, Faculty of Pharmacy, Department of Pharmacognosy, Kayisdagi Cad., Atasehir, 34755, Istanbul, Turkey
*E-mail: etil.ariburnu@yeditepe.edu.tr

*Cistus* species (Cistaceae) are mainly composed of flavonoids, phenolic acids and terpenic compounds which exert antioxidant, anti-inflammatory, anti-ulcer, antimicrobial activities etc[1]. Among the different *Cistus* species, especially *C. creticus* L. has recently been formulated as a food supplement and is used specifically for the prevention and the treatment of upper respiratory system infections. To provide the claimed pharmacological activity in food supplements, the effective ingredients in the extracts must be in specific concentration. As there is no standardization procedure in place for commercially available products, there are doubts regarding their quality. In addition to the insufficient amount of the active component(s), the usage of inappropriate plant material or adulteration with natural or synthetic products may negatively affect public health. Therefore, quality control in food supplements are critically in terms of reproducible pharmacological response.
This study aimed to prepare a guideline for the qualification of the aerial parts of *C. creticus* to be included in Turkish Pharmacopoeia. Accordingly, macroscopic and microscopic analyses were performed. The marker components in the hydroalcoholic extract of the aerial parts of *C. creticus* were identified by high-performance thin-layer chromatography (HPTLC) and then quantified by a validated high-performance liquid chromatographic (HPLC) method. Furthermore, other qualification tests, i.e. foreign matter, loss on drying and total ash tests were also set.

**Key words:** *Cistus creticus* L., standardization, pharmacognostic methods

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# OP13- Assessment of in vitro Bioaccessibility of Copper, Molybdenum, Zinc and Tungsten in Turkish Hazelnut (Corylusavellana L.) Samples by in vitro Methods

Zeynep Ozsahinoglu[1*], Umran Seven Erdemir[1,2]
[1]Bursa Uludag University, Faculty of Arts and Sciences, Chemistry Department, 16059, Bursa, Turkey
[2]*Science and Technology Application and Research Center of Bursa Uludag University, 16059 Bursa, Turkey*
**Email:* 501909011@ogr.uludag.edu.tr

Hazelnuts that are widely used in the food, cosmetics and pharmaceutical industries are an important agricultural and horticultural food in Turkey. It takes an important place in human healthdepending on their valuable nutrients such as minerals.[1]While uptake and translocation of mineral nutrients in plant metabolism may be associated by accumulation in crop plants from its soil,[2]fertilizers and soil amendments, that may be naturally rich in trace elements, or contaminated may promote or alleviate trace element risks. Thus, the levels of trace elements present in relation to soil, plant, and food-chain processes should be considered.[3]
In this study, optimized in vitro simulated gastrointestinal digestionmethod were used to determine the bioaccessible mineral contents ( copper, molybdenum, zinc and tungsten)in hazelnut samples grown in The Black Sea Region of Turkey. The total and bioaccessible fractions of selected elements were determined by inductively coupled plasma–mass spectrometry after microwave-assisted digestion, and validation parameters were evaluated using different kinds of standard reference materials to interpret the potential health effects of nuts for wellbeing.
**Keywords**:Hazelnut (*Corylusavellana* L.), element, in-vitro method, bioaccessibility, ICP-MS

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## OP14- Assessment of the elemental content and bioaccessibility of Matthiola incana by ICP-MS

Taha Turgut Unal[1,2], Erturk Bekar[1,2], Umran Seven Erdemir[3,2], Arzu Akpınar Bayızıt[1,2], Perihan Yolci Omeroglu[1,2], Ö. Utku Çopur[1,2]

[1]Bursa Uludag University Faculty of Agriculture, Food Engineering Department, 16059, Bursa, Turkey
[2]Science and Technology Application and Research Center of Bursa Uludag University, 16059 Bursa, Turkey
[3]Bursa Uludag University Faculty of Arts and Sciences, Chemistry Department, 16059, Bursa, Turkey
*E-mail: tahaunal@uludag.edu.tr

In Asian and European countries and in ancient Greek and Roman periods, different cultures used flowers in their traditional dishes for richness and difference in terms of both visual and taste[1]. Edible flowers which are used in fresh or dry form do not show toxic properties and have positive effects on health when consumed with a human diet[2-4]. There are 97 families, 100 genera, and 180 species as edible flowers in the literature and these flowers are included in hot drinks, tea, liquor, cake, bread, appetizer, confectionery, jelly, jam, dessert, and salad recipes[1].
*Matthiola incana* (gillyflower) belongs to the Brassicaceae family and is an edible flower genus with its 48 herbaceous and woody species that grow widely in the Mediterranean basin and Northeast Africa-Asia. Its wild species are mostly found in meadows and rocky areas in the southern part of Europe. The gillyflower is a popular ornamental plant in landscaping due to its vivid colors and scent. It is also preferred because of its nerve-calming properties. In addition, aphrodisiac, diuretic, and stimulant effects have been reported in gillyflower seeds. Its flowers are mostly consumed as vegetables or for decoration in desserts[5].
In tis study, the mineral content (micro, macro, and toxic) of the flowers belonging to the Canetto White and Noble varieties of *Matthiola incana*, which is also known as the "Gillyflower" will be assessed after determination by ICP-MS. Stomach and intestine conditions will be mimicked in order to determine the released elemental contents during digestion or absorption in the stomach and intestines, in respectively from edible flowers. Plant based reference materials were used to evaluate accuracy of the measurements and the other validation parameters were also performed. Thus, the importance of this plant will be further evaluated.

**Keywords**: *Matthiola incana*, Canetto White, Noble, edible flower, element, in-vitro digestibility, ICP-MS

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## OP15- R761H M694I, M694V, V726A, R202Q, M680I and E148Q MEFV GENE (Familial Mediterranean Fever Gene) MUTATIONS IN THE AZERBAIJANİAN PATİENTS

**Huseynova Lala Sameddin, Huseynova Qumru Orkhan**

*Azerbaijan Medical University, Department of Medical biology and genetics. Senior teacher1 Azerbaijan. Baku city*
E-mail: huseynli85.85@mail.ru

MEFV gene (Familial Mediterranean Fever Gene) is located on chromosome 16 - 16.13.3., and it is composed of 3,242,028-3,256,776 nucleotides. It is specified as having an autosome-recessive hereditary type. Autosome-dominant hereditary species were also recorded.
The MEFV RoRet genes family contains exon 10, consisting of 10,000 nucleotide sequences. The length of the transcript consists of 3.7 thousand nucleotide sequences consisting of 761 synthesized pyridine protein amino acid bases
MEFV gene researches were performed in the population of the Republic of Azerbaijan. Over 80 mutations have been identified so far. Four missense mutations (M680I, M694V, M694I, and V726A) in exon 10, together with E148Q in exon 2, account for the majority of FMF mutations in populations originating from areas around the eastern Mediterranean region. The various combinations of MEFV mutations are largely associated with the phenotypic variability of the disease. The most serious complication of FMF is the development of renal amyloidosis, which may be the only manifestation of the disease. The molecular-genetic study of the MEFV gene isolated from the genome DNA of 18 patients suspected of Family Disease Fever has identified 7 mutations: R761H M694I, M694V, V726A, R202Q, M680I and E148Q.
All patients were of Azerbaijan origin, from the Mediterranean region of Azerbaijan. They were evaluated for clinical findings and family history of FMF.
Seven mutations of MEFV gene were identified in heterozygous, homozygous and compound conditions: R761H M694I, M694V, V726A, R202Q, M680I and E148Q. The mutations E148Q and R202Q were discovered in exon 2 and R761H M694I, M694V, V726A, M680I were found in exon10 in the population of the Republic of Azerbaijan.
Three of 18 examined patients were heterozygotes, eight homozygotes, and seven double heterozygotes (compounds). Two mutations R202Q and E148Q were found in exon 2 (28.57%) of the MEFV gene, but the remaining five mutations, M860I, R761H, M694I, M694V and V726A were located in the exon 10 of the gene (71.43%). R202Q mutation was found in two heterozygous patients, mutation E148Q was heterozygous in one patient and as compound in two patients (R202Q /E148Q).
The homozygous form of R761H mutation was registered in four cases, and M694I mutation in two persons in compound state (R761H / M694I). M680I mutation was identified to be homozygous in two patients (M680I / M680I).
The M694I mutation was found in compound state separately with two other mutations as M694V and R202Q (M694I/ M694V and M694I / R202Q).
The mutation of the V726A was identified as homozygous in three cases. It should be noted, that patients with homozygous form of mutations had parents in consanguineous marriages.
The highest gene frequency of the MEFV gene examined in 18 patients was 27.3% which belongs to R761H mutation. The second place takes mutation V726A (18.2%), and M694I (15.2%) stands in the third place.
To prevent the hereditary disease of the Family of Mediterranean Fever, parents of 18 patients were invited to the consultation of physician-genetics. Parents have got information about a healthy child prognosis for the next pregnancy. When the inheritance type is autosomal-recessive, it has been reported that the risk of a childbirth in the next pregnancy is 25%. As the majority of families are in reproductive age, they are preparing for the prenatal diagnosis of the fetus in the next pregnancy with their consent.

# Virtual PRESENTATION (VP)

## VP1- Synthesis Of Copper And Zinc Complexes Of A Schiff Base Derivatized From Phenylalanine

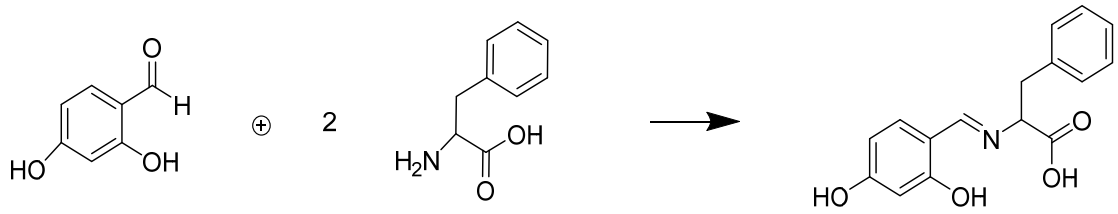
**Fatma Nur ATALAY DİNLER, Ahmed Nuri KURŞUNLU, Ersin GÜLER**
University of Selcuk, Konya-Turkey
*E-mail:* fatmanuratalay0304@gmail.com

Schiff bases are versatile ligands containing imine or azomethine. Therefore, they have wide application areas. These are anticancer, antibacterial, antituberculosis, antifungal. also some schiff bases have fluorescence, potentiometric cation maintenance and collection properties.

Schiff bases and their metal complexes play an important role in the bioinorganic chemistry due to their structural diversity and wide spectrum of their biological activities. A number of Cu(II) and Zn(II) complexes with Schiff bases have been already studied for antibacterial [1-2], antimycotic ,cytostatic and cytotoxic activity [3], interaction with DNA, radical scavenging effect , and enzyme inhibition.

Metal complexes of the Schiff-base ligands containing amino acids have a variety of applications, including clinical, analytical and industrial applications. Such complexes have been also utilized as catalysts for many reactions and as low molecular models in understanding of biological processes. In particular, transition metal complexes of salicylaldehyde aminoacid Schiff bases may serve as stable models for the key intermediates in many metabolic reactions of amino acids catalysed by enzymes requiring pyridoxal as a cofactor.

In this study, we carried out a classical condensation reaction that used 2,4-dihydroxybenzaldehyde and phenylalanine to obtain Schiff bas based on amino acid. Then, the copper and zinc complexes of the Schiff base based-on phenylalanine were prepared in suitable condition such as methanolic medium, temperature and etc. All compounds were characterized with FT-IR and NMR spectroscopies and melting point.




**Scheme 1** The synthetic route of the Schiff base based-on phenylalanine

***Key Words:*** *Metal complexes; Schiff bases; Antibacterial; Aminoacid;*

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