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# TÜRK BİYOKİMYA DERGİSİ

# Turkish Journal of Biochemistry

## TBD ULUSLARARASI BİYOKİMYA KONGRESİ 2021
## 32. ULUSAL BİYOKİMYA KONGRESİ
27-30 Ekim 2021, Gaziantep, Türkiye

## TBS INTERNATIONAL BIOCHEMISTRY CONGRESS 2021
## 32ND NATIONAL BIOCHEMISTRY CONGRESS
27-30 October 2021, Gaziantep, Turkey

Türk Biyokimya Derneği'nin yayın organıdır.
*[Published by the Turkish Biochemical Society]*

2021

Cilt [Volume] 46

Ek Sayı [Supplement] 2

YER ALDIĞI İNDEKSLER [INDEXED BY]

SCI Expanded, Journal Citation Reports/Science Edition, Chemical Abstracts, Index Copernicus, Embase, Scopus, Ulakbim Türk Tıp Dizini, Ulrich's Periodical Directory, EBSCO, Türkiye Atıf Dizini

2021 . VOLUME 46 . SUPPLEMENT ISSUE 2

# TURKISH JOURNAL OF BIOCHEMISTRY
# TÜRK BİYOKİMYA DERGİSİ

OFFICIAL JOURNAL OF THE TURKISH BIOCHEMICAL SOCIETY



DE GRUYTER

*Turkish Journal of Biochemistry* (TJB), official journal of Turkish Biochemical Society, is issued electronically every 2 months. Research articles, reviews, short communications, technical reports, case presentations, opinions, and letters to the editor, that have not published elsewhere, on biochemistry, clinical biochemistry, molecular biology, molecular genetics, biotechnology, bioinformatics, bioengineering, and their educational disciplines are published in the journal.

The main aim of the journal is to support the research and publishing culture by ensuring that every published manuscript has an added value and thus providing international acceptance of the "readability" of the manuscripts published in the journal.

e-ISSN 1303-829X

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/view/j/tjb.

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**TYPESETTING** Compuscript Limited, Shannon, Ireland

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# WELCOME MESSAGE

Dear Colleagues, Dear Friends,

It seems that we, as humanity, have survived the difficult period of the pandemic. After about a year and a half, we can say that our knowledge about the pandemic has increased and we have adapted to the pandemic conditions better. The acceleration of vaccination studies in our country is also promising…

Due to the pandemic, we could not do our annual congress face-to-face in Gaziantep as we planned last year. Unfortunately, we could not hold another face-to-face meeting under physical conditions for the same reasons. We missed getting together...

For these reasons, we have reinforced our decision to hold the annual congress this year, as we had planned last year, as an international congress in Gaziantep, where Mustafa Kemal gave the title "Gazi" (War Veteran in English).

Our congress will be held on 27-30 October 2021, again to cover our Republic Day. Moreover, this year is the 100th anniversary of Gaziantep's liberation from occupation.

We invite you to share the rich scientific program at the International Biochemistry Congress 2021 // 32nd National Biochemistry Congress, to meet in Gaziantep, which has a very rich historical and cultural heritage, on the 100th anniversary of the liberation of our "Gazi" city, on our 98th Republic Day, and to the "socialization" we miss.

With my best wishes,

Dogan Yucel
Chair of Congress
President of TBS

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- Serafettin Ozkurt

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- Dogan Yucel

# SCIENTIFIC PROGRAM

## 27 October 2021, Wednesday — HALL A

| | | |
|---|---|---|
| **16:00 - 17:15** | **75 min** | **OPENING**<br>***Chairpersons: Gunnur Dikmen & Oytun Portakal*** |
| **16:00 - 16:10** | **10 min** | **Opening Speech**<br>***Dogan Yucel, TBS President*** |
| **16:10 - 16:20** | **10 min** | **IFCC Vision and Strategic Direction: Advancing excellence in laboratory medicine for better healthcare worldwide**<br>***Khosrow Adeli, IFCC President, Canada*** |
| **16:20 - 16:30** | **10 min** | **European Federation of Laboratory Medicine (EFLM), Activities and Projects**<br>***Tomris Ozben, EFLM President-Elect, Turkey*** |
| **16:30 - 17:15** | **45 min** | **OPENING LECTURE**<br>**KEYNOTE 1**<br>Diets, Mitochondria, and Calcium: A Metabolic Triad<br>***Alicia Kowaltowski, Brazil*** |
| **18:15 - 22:00** | **225 min** | **Museum Visit and Welcome Cocktail**<br>**Zeugma Mosaic Museum** |

## 27 October 2021, Wednesday — HALL C

| | | |
|---|---|---|
| **09:00 - 12:00** | **180 min** | **WORKSHOP / COURSE**<br>Use of Separation Techniques in Clinical Laboratories<br><br>***Instructors:***<br>***Ali Unlu***<br>***Elif Isbilen***<br>***Hulya Cicek***<br>***Sedat Abusoglu*** |

# SCIENTIFIC PROGRAM

## 28 October 2021, Thursday

HALL A

| | | |
|---|---|---|
| **09:00 - 10:30** | **90 min** | **SYMPOSIUM 1**<br>**CANCER**<br>***Chairpersons: Gunnur Dikmen & Engin Ulukaya*** |
| 09:00 - 09:25 | 25 min | The Fate of the Cell that Cannot Die: Cancer<br>***Engin Ulukaya*** |
| 09:25 - 09:50 | 25 min | Single-cell, Multi-function: Cancer<br>***Saadettin Kilickap*** |
| 09:50 - 10:15 | 25 min | Why Preclinical Studies of Cancer are not implemented on the Clinic: Usual Suspects and New Players<br>***Ali Burak Ozkaya*** |
| 10:15 - 10:30 | 15 min | Questions & Answers |
| **10:30 - 11:00** | **30 min** | **Coffee Break & Exhibition Area & Posters Visit** |
| **11:00 - 11:45** | **45 min** | **KEYNOTE 2**<br>**CARDIAC MARKERS**<br>***Chairperson: Sedef Yenice***<br>High Sensitivity Cardiac Troponin: Need For Collaboration Between Laboratory Medicine and Clinical Practice / Discussions on Recent ESC NSTEMI & NICE Guidelines<br>***Fred Apple, USA*** |
| **11:45 - 12:30** | **45 min** | **Clinical Approach to Sensitive Cardiac Troponin Testing (accompanied by up-to-date guidelines)**<br>**ROCHE Satellite Symposium**<br>***Chairperson: Dr. Murat Cihan, Ordu University Department of Biochemistry, Biochemistry Specialist***<br>***Speaker: Prof. Bulent Gorenek, Eskisehir Osmangazi University, Department of Cardiology, Cardiology Specialist*** |
| **12:30 -13:30** | **60 min** | **Lunch Break I Exhibition Area & Poster Visit** |
| **13:30 - 14:15** | **45 min** | **Guided Approach to Blood Sample Collection from Intravenous Catheters and Children**<br>**BECTON DICKINSON Satellite Symposium**<br>***Chairperson: Assoc. Dr. Mehmet Senes***<br>***Speaker: Dr. Nedim Albayrak / Head of Middle East Medical Affairs Department*** |
| **14:15 - 15:45** | **90 min** | **SYMPOSIUM 2**<br>***Dr. Ibrahim Onur Session***<br>**PEDIATRIC LABORATORY MEDICINE**<br>***Chairpersons: Mehmet Tarakcioglu & Lulufer Tamer*** |
| 14:15 - 14:40 | 25 min | Childhood Diabetes and Its Treatment: Current Situation<br>***Sukru Hatun*** |
| 14:40 - 15:05 | 25 min | Pediatric Reference Ranges<br>***Khosrow Adeli, Canada*** |
| 15:05 - 15:30 | 25 min | The Story of the Discovery of 4 New Genes, Mutations of which Cause Hereditary Nephropathy, in Hacettepe<br>***Fatih Ozaltin*** |
| 15:30 - 15:45 | 15 min | Questions & Answers |
| **15:45 - 16:15** | **30 min** | **Coffee Break & Exhibition Area & Poster Visit** |
| **16:15 - 17:45** | **90 min** | **FORUM**<br>**CURRENT AGENDA IN CLINICAL BIOCHEMISTRY PRACTISE:**<br>**ISLAB AND CITY HOSPITALS**<br>***Chairpersons: Dogan Yucel & Berrin Bercik Inal***<br>***M. Ertugrul Egin & Ibrahim Karakus***<br>***Cemal Kazezoglu & Kemal Memisoglu & Huriye Serin & Selin Yildiz & Fatma Meric Yilmaz*** |
| **17:45 - 18:30** | **45 min** | **Monoclonal Gammopathies: Diagnosis and Monitoring**<br>**BINDING SITE Uydu Sempozyumu**<br>***Chairperson: Prof. Dr. Dogan Yucel***<br>***Speaker: Dr. Mohannad Ali Yacoub / Medical Scientific Liaison at The Binding Site, phD in Molecular Genetics*** |

# SCIENTIFIC PROGRAM

## 28 October 2021, Thursday

HALL B

| | | |
|---|---|---|
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| **10:30 - 11:00** | **30 min** | **Coffee Break & Exhibition Area & Posters Visit** |
| **12:30 -13:30** | **60 min** | **Lunch Break I Exhibition Area & Poster Visit** |
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# SCIENTIFIC PROGRAM

## 28 October 2021, Thursday

HALL B

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| **16:15 - 17:45** | **90 min** | **Oral Presentation Session 5**<br>***Chairpersons: Tuba Candar & Zafer Yonden***<br>**S-052** {DRACAENA CINNABARI} BALF. F. ELEMENTAL ANALYSIS OF RESIN, ***Ihsan Obali***<br>**S-053** INVESTIGATION OF THE POSSIBLE ROLE OF MACROPHAGE MIGRATION INHIBITOR(MIF) -173G/C POLYMOPHISM IN ATHEROSCLEROSIS, ***Rojda Tanriverdi***<br>**S-054** DETERMINATION OF ORGANIC ACID PROFILE AND AMOUNTS OF THE EXTRACTS OF {DRACAENA CINNABARI} BALF. F. RESIN EXTRACTED USING DIFFERENT SOLVENTS, ***Husamettin Vatansev***<br>**S-055** IMMOBILIZATION OF SACCHAROMYCES CEREVISIAE INVERTASE ON CARBOXYLATED MULTIWALLED CARBON NANOTUBES, ***Yakup Aslan***<br>**S-056** IMMOBILIZATION OF GLUTATHIONE REDUCTASE ENZYME IN POTENTIOMETRIC BASED BIOSENSOR DESIGN, ***Basak Gunasti***<br>**S-057** INVESTIGATION OF THE EFFECT OF MISTLETOE EXTRACT ON METHYL ARGININE LEVELS IN IONIZED RADIATION EXPOSURE, ***Hakan Vatansev***<br>**S-058** DETERMINATION OF SLEEP QUALITY AND HEDONIC HUNGER STATUS OF UNIVERSITY STUDENTS WITH AND WITHOUT NUTRITION EDUCATION, ***Saadet Ozen***<br>**S-059** THE DETERMINATION OF EFFECT OF NUTRITION EDUCATION ON EATING BEHAVIOR DISORDERS AND BODY MASS INDEX, ***Deniz Mihcioglu***<br>**S-060** PROTECTIVE EFFECTS OF { A. CALVERTII } AGAINST CANCER AND MICROORGANISMS, ***Tuba Turkoglu***<br>**S-061** DETERMINING COLON MICROBIOME IN PATIENTS WITH COLON CANCER, ***Sibel Kucukyildirim***<br>**S-126** THE EFFECT OF VITAMIN E ON ISCHEMIA-REPERFUSION INJURY IN THE RAT KIDNEY, ***Mustafa Nisari***<br>**S-063** EVALUATION OF ALGINATE-GELATIN POLYMERS IN GLUCOSE OXIDASE-PEROXIDASE MODEL IN ENZYME IMMOBILIZATION IN AMPEROMETRIC BIOSENSORS, ***Kezban Kartlasmis***<br>**S-064** THE EFFECT OF METFORMIN ON SALT INDUCIBLE KINASE 1 (SIK1) AND SALT INDUCIBLE KINASE 2 (SIK2) IN MCF-7 CELL AS A ANTICANCER AGENT, ***Eser Cakmak***<br>**S-065** INVESTIGATION OF THE CYTOTOXIC, GENOTOXIC AND APOPTOTIC EFFECTS OF CURCUMIN ON BREAST CANCER CELLS, ***Kubra Bozali***<br>**S-066** INVESTIGATION OF THE CYTOTOXIC, GENOTOXIC, AND APOPTOTIC EFFECTS OF 7-HYDROXY-4-CHLOROMETHYL-8-METHYL COUMARIN IN HEPATOCELLULAR CARCINOMA, ***Fatma Sena Dumlu***<br>**S-067** A NEW AGENT OF LUNG CANCER THERAPY: 7-ETHYLAMINO-4-CHLOROMETHYL COUMARIN, ***Beyza Nur Ozkan***<br>**S-068** RET G691S POLYMOPHISM IN BREAST CANCER PATIENTS, ***Tuba Taskan***<br>**S-069** EFFECT OF CURCUMIN AND ITS ANALOGUES ON MIR-133B AND THEIR CORRELATION WITH GSTP-1 EXPRESSION IN CISPLATIN RESISTANCE OF OVARIAN CANCER CELLS, ***Esin Bayrali***<br>**S-070** LIPOLYTIC ACTIVITY OF HUMAN SERUM BUTYRYLCHOLINESTERASE, ***Muslum Gok***<br>**S-071** TARTARIC ACID COATED MAGNETIC NANOPARTICLE SYNTHESIS, IDARUBICIN IMMOBILIZATION AND ITS EFFECT ON ACUTE PROMYELOCYTIC LEUKEMIA (HL-60) CELL LINE, ***Hasan Ulusal***<br>**S-072** ROLE OF ENDOGEN ERAD INHIBITOR (SVIP) IN AUTOPHAGY AND LYSOSOME, ***Recep Ilhan***<br>**S-073** ANTICANCER ACTIVITY AND EXPRESSION LEVELS OF {DUSP} GENES OF DOXORUBICIN AND PACLITAXEL DRUGS LOADED ON THE NANOCARRIER SYSTEM IN PROSTATE CANCER, ***Zuhal Tuncbilek***<br>**S-074** IN VITRO CYTOTOXIC ACTIVITY OF ZEOLITE-FOLAT-CHITOSAN NANOPARTICLES LOADED IN THE NANOCARRIER SYSTEM IN DU-145 CELL LINE, ***Gulcihan Cinar***<br>**S-075** THE ROLE OF CYCLIN GENES IN CELL CYCLE CHECKPOINTS IN RESISTANCE TO BORTEZOMIB IN MULTIPLE MYELOMA CELL LINES, ***Busra Dursun***<br>**S-076** INVESTIGATION OF IN VITRO AND IN VIVO ANTI-CANCER EFFECT OF THYMOQUINONE-OXIME ON COLORECTAL CANCER, ***Eray Metin Guler***<br>**S-077** DETERMINATION OF THE EXPRESSION LEVELS OF DUSP 1, 2, 4, 6 AND 10 GENES IN PATIENTS WITH EYELID TUMORS, ***Esma Ozmen*** |

# SCIENTIFIC PROGRAM

## 28 October 2021, Thursday

HALL E

| | | |
|---|---|---|
| **09:00 - 10:30** | **90 dk** | **Oral Presentation Session 2**<br>***Chairpersons: Ayliz Velioglu & Hikmet Can Cubukcu***<br>**S-130** THE IMPORTANCE OF FLOW CYTOMETRY IN THE CASE OF PLASMA CELL LEUKEMIA, ***Cemil Gulum***<br>**S-015** BIOMARKERS FOR THE EARLY DIAGNOSIS OF BACTEREMIA IN SEPTIC PATIENTS IN THE EMERGENCY DEPARTMENT, ***Ahmed Kerem Sayar***<br>**S-016** EFFECT OF HEMOLYSIS ON RESULTS IN STA COMPACT MAX COAGULATION DEVICE WORKING WITH MECHANICAL METHOD: EXAMPLE OF HAYDARPASA NUMUNE HEALTH APPLICATION AND RESEARCH CENTER, ***Demet Ozcelik***<br>**S-017** INVESTIGATION OF PROGNOSTIC INDICATORS IN PATIENTS WITH COVID 19, ***Didem Barlak Keti***<br>**S-019** INVESTIGATION OF IL-1 BETA LEVELS IN THE FOLLOW-UP OF COVID-19 POSITIVE PATIENTS, ***Irem Kose***<br>**S-020** INVESTIGATION OF ADROPIN AND INFLAMMATION MARKERS IN MALE SUBJECTS WITH SEVERE OBSTRUCTIVE SLEEP APNEA SYNDROME WITHOUT DIABETES, ***Levent Deniz***<br>**S-021** THIOL/DISULFIDE BALANCE IN ACTIVE ULCERATIVE COLITIS, ***Gozde Ulfer***<br>**S-022** SYSTEMIC IMMUNE-INFLAMMATORY INDEX AS AN ANTI-INFLAMMATORY INDICATOR OF COLCHICINE IN PATIENTS WITH BEHCET'S DISEASE, ***Yasemin Atici***<br>**S-023** DIAGNOSTIC VALUE OF THROMBOCYTE AGGREGATES IN SARCOIDOSIS BY FLOW CYTOMETRIC ANALYSIS, ***Faruk M Baskan***<br>**S-024** THE IMPORTANCE OF TRYPTOPHAN AND ITS METABOLITES IN OBESITY, ***Sara Cibik***<br>**S-025** THE EFFECTS OF SOME PHOSPHODIESTERASE5 INHIBITORS ON OXIDATIVE STRESS, VEGF, BMP 2 AND 9 IN THE LIVER TISSUE OF OVARIECTOMIZED RATS, ***Hamit Hakan Alp***<br>**S-026** OXIDATIVE STRESS AND INFLAMMATORY STATUS IN CHILDREN WITH UNDESCENDED TESTES, ***Sumeyye Akin*** |
| **10:30 - 11:00** | **30 dk** | **Coffee Break & Exhibition Area & Posters Visit** |
| **12:30 -13:30** | **60 dk** | **Lunch Break I Exhibition Area & Poster Visit** |
| **14:15 - 15:45** | **90 dk** | **Oral Presentation Session 4**<br>***Chairpersons: Yasin Bayir & Fatma Inanc Tolun***<br>**S-041** A COMPARISON OF IRON, FOLATE, AND VITAMIN B12 DEFICIENCY RATES OF FEMALE CITIZENS AND IMMIGRANTS OF REPRODUCTIVE AGE APPLIED A PUBLIC HEALTH LABORATORY, ***Kamil Taha Ucar***<br>**S-042** A DECISION SUPPORT SYSTEM TO IDENTIFY DOWNEY CELLS FROM LEUKOCYTES VIA ARTIFICIAL INTELLIGENCE, ***Yasemin Ardicoglu Akisin***<br>**S-043** INVESTIGATION OF THE TRYPTOPHAN KYNURENINE PATHWAY IN PATIENTS WITH SEVERE ACNE VULGARIS, ***Betul Calis***<br>**S-044** COMPARISON OF LIPEMIA INTERFERENCE CREATED WITH NATURAL ULTRALIPEMIC MATERIAL AND INTRAVENOUS LIPID EMULSION IN COAGULATION TESTS, ***Emel Colak Samsum***<br>**S-045** PREVALENCE OF IODINE DEFICIENCY IN CHILDHOOD AND ADOLESCENCE; SINGLE CENTER EXPERIENCE, ***Humeyra Acikan***<br>**S-157** THE RELATIONSHIP BETWEEN SERUM PLASMINOGEN ACTIVATOR INHIBITOR-1 LEVELS AND THE COURSE OF DISEASE AND OTHER BIOCHEMICAL PARAMETERS IN PATIENTS WITH COVID-19, ***Ecem Baltan***<br>**S-047** EVALUATION OF HEALTHY YOUNG ADULTS IN THE SARS-COV-2 PROCESS ACCORDING TO THE DSM-V EATING DISORDER DIAGNOSTIC SCALE, ***Derya Murat Ozgun***<br>**S-048** THE RELATIONSHIP OF LEUKOCYTE SUBGROUPS WITH CYTOKINS IN COVID-19 PATIENTS, ***Cemil Gulum***<br>**S-049** EVALUATION OF PANNEKSIN-1 LEVEL IN COVID-19 PATIENTS, ***Kubra Dogan***<br>**S-051** THIOL LEVEL AND TOTAL OXIDANT/ANTIOXIDANT STATUS IN PATIENTS WITH COVID-19 INFECTION, ***Gokhan Cakirca***<br>**S-140** PERFORMANCE EVALUATION OF CEDIA BENZODIAZEPINE ANALYSIS, ***Saliha Aksun*** |
| **15:45 - 16:15** | **30 dk** | **Coffee Break & Exhibition Area & Posters Visit** |

# SCIENTIFIC PROGRAM

## 28 October 2021, Thursday

HALL E

**16:15 - 19:15** | **180 dk**

**Oral Presentation Session 6**

***Chairpersons: Huseyin Fatih Gul & Nilgun Isiksacan***

**S-078** DETECTION OF HPV IN GENOMIC LEVELS BY CAPACITIVE BIOSENSOR, ***Zihni Onur Uygun***

**S-079** GENERATION OF TRANSGENIC MOUSE MODELS BY ELECTROPORATION OF CAS9/SGRNA RIBONUCLEOPROTEIN PARTICLES INTO EMBRYOS, ***M. Kasim Diril***

**S-080** PREPARATION OF A SELF-ASSEMBLING MONOLAYER BASED MOLECULARLY IMPRINTED POLYMER SENSOR FOR DOPAMINE DETERMINATION, ***Hilmiye Deniz Ertugrul Uygun***

**S-081** DEVELOPMENT OF ANTIMICROBIAL PEPTIDE-BASED BIOSENSOR FOR DETECTION OF CIRCULATING PROSTATE CANCER CELLS AS A LIQUID BIOPSY BIOMARKER, ***Cemrehan Fedaci***

**S-082** DICLOFENAC DOWN-REGULATES COX-2 INDUCED EXPRESSION OF CD44 AND ICAM-1 IN HUMAN HT29 COLORECTAL CANCER CELLS, ***Cagatay Yilmaz***

**S-083** THE PREDICTIVE EFFECT OF GENERAL FAT KNOWLEDGE LEVELS ON THE RISK OF CORONARY ARTERY DISEASE, ***Oyku Gonul Geyik***

**S-084** THE INVESTIGATION OF PROTECTIVE EFFECTS OF EPIGALLOCATECHIN-3-GALLATE AGAINST CISPLATIN INDUCED LUNG TISSUE INJURY IN RATS, ***Seda Beyaz***

**S-085** THE ROLE OF ESTROGEN IN THE CHANGE OF MESENCHYMAL STEM CELL-DERIVED EXOSOML MIRNAS INVOLVED IN CARDIAC REGENERATION, ***Ceylan Verda Bitirim***

**S-086** ANALYSIS OF DISULFIDE-LINKED OLIGOMERIZATION OF MUTANT AVP PRECURSORS, ***Beril Erdem Tuncdemir***

**S-087** INVESTIGATION OF THE EFFECT OF EPIGALLOCATECHIN-3-GALLATE ON PROTEIN EXPRESSION IN RATS INJURED WITH CISPLATIN BRAIN DAMAGE, ***Ozlem Gok***

**S-088** LINALOOL INDUCES OXIDATIVE STRESS AND CELL DEATH IN A DOSE-DEPENDENT MANNER IN YEAST CELLS ({S. POMBE}), ***Hizlan Hincal Agus***

**S-089** THE EFFECT OF MIR-144 AND MIR- 451 EXPRESSION CHANGES ON SICKLE CELL DISEASE, ***Ebru Dundar Yenilmez***

**S-090** STRUCTURAL BIOLOGY OF THE FTSH-HFLKC COMPLEX INVOLVED IN PROTEIN QUALITY CONTROL, ***Gunce Goc***

**S-091** URIC ACID MAY INDUCE PROLIFERATION OF RAT PRIMARY VASCULAR SMOOTH MUSCLE CELLS THROUGH MAPK SIGNALING PATHWAYS VIA TRIGGERS INHIBITION OF APOPTOSIS VIA MITOCHONDRIAL AND CASPASE-DEPENDENTLY, ***Segun Dogru***

**S-092** STRUCTURAL STUDIES OF FTSH AND FTSH COMPLEXES INVOLVED IN PROTEIN QUALITY CONTROL, ***Sema Aygar***

**S-093** INVESTIGATION OF THE EFFECTS OF BORIC ACID AND ZINC BORATE IN L929 MOUSE FIBROBLAST CELL LINE, ***Maide Sena Civelek***

**S-094** INVESTIGATION OF THE EFFECTS OF BORIC ACID AND ZINC BORATE ON MIGRATION IN L929 MOUSE FIBROBLAST CELL LINE, ***Emir Enis Yurdgulu***

**S-095** DETERMINATION OF THE RELATIONSHIP BETWEEN SERUM STREM-1/STREM-2 LEVELS AND INFLAMMATION IN PATIENTS WITH FAMILIAL MEDITERRANEAN FEVER, ***Meryem Cemiloglu***

**S-096** A RAPID, ROBUST AND RELIABLE MEASUREMENT METHOD FOR THE QUANTITATION OF MIRTAZAPIN, ***Gulsum Abusoglu***

**S-097** DEVELOPMENT OF TANDEM MASS SPECTROMETRY METHOD FOR THE DETERMINATION OF HYDROXYZINE HYDROCHLORIDE, ***Merve Ilhan***

**S-098** DETECTION OF LEVOCETRIZINE BY TANDEM MASS SPECTROMETRIC METHOD, ***Sukriye Yabanciun***

**S-099** EVALUATION OF THE EFFECT OF PEPTIDE PROFILES OF DIFFERENT A-CHCA MATRIX CONCENTRATION AND COMPOSITION, ***Busra Ergun***

**S-100** INVESTIGATION OF PROTECTIVE EFFICACY OF A NOS-2 INHIBITOR IN PRILOCAINE-INDUCED HUMAN RETINAL EPITHELIAL CELL TOXICITY, ***Aleyna Oztuzun***

**S-101** ENZALUTAMIDE, AN ANDROGEN RECEPTOR ANTAGONIST, OVERCOMES CHEMORESISTANCE BY SENSITIZING TRIPLE-NEGATIVE BREAST CANCER CELLS TO APOPTOSIS, ***Ozlem Dalmizrak***

**S-102** TUNICAMYCIN INDUCED SPHINGOLIPID AND POLYUNSATURATED FATTY ACID CHANGES IN HUMAN KIDNEY EPITHELIAL CELLS, ***Tugce Ceker***

**S-103** ASSESSMENT OF PROTEOLYTIC DIGESTION PRODUCTS FOR TARGETED PROTEOMICS STUDIES, ***Pelin Yildiz***

**S-159** HYPERCOAGULANT EFFECTS OF UDP VIA LEUKOCYTES, ***Evren Kilinc***

# SCIENTIFIC PROGRAM

## 28 October 2021, Thursday

### HALL C

**09:00 - 12:00** **180 min**

**WORKSHOP / COURSE**

Use of Separation Techniques in Clinical Laboratories

***Instructors:***
***Ali Unlu***
***Elif Isbilen***
***Hulya Cicek***
***Sedat Abusoglu***

## 28 October 2021, Thursday

### HALL D

**14:00 - 17:00** **180 min**

**WORKSHOP / COURSE**

From Theory to Practice Control and External Quality Evaluation: Problems and Solutions

***Instructors:***
***Muhittin Serdar***
***Dogan Yucel***

# SCIENTIFIC PROGRAM

## 29 October 2021, Friday

**HALL A**

| | | |
|---|---|---|
| **09:00 - 10:30** | **90 min** | **SYMPOSIUM 3**<br>***Dr. Lutfi Cetinkaya Session***<br>**With Contributions of Siemens Healthineers**<br>**COVID-19 PANDEMIC and VACCINE**<br>***Chairpersons: Fehime Benli Aksungar & Cihan Coskun*** |
| 09:00 - 09:25 | 25 min | COVID-19: Is It A Biological Weapon?<br>***Levent Kenar*** |
| 09:25 - 09:50 | 25 min | COVID-19 Vaccines: Efficacy, Safety and Future Prospects<br>***Erkan Ozcengiz*** |
| 09:50 - 10:15 | 25 min | COVID-19 in Childhood<br>***Yasemin Ozsurekci*** |
| 10:15 - 10:30 | 15 min | **SIEMENS Talks**<br>**Our Response to the COVID-19 Pandemic - Siemens Healthineers**<br>***Speaker: Fatih Kucukali (Siemens Healthineers, Hormone Product Manager)*** |
| **10:30 - 11:00** | **30 min** | **Coffee Break & Exhibition Area & Poster Visit** |
| **11:00 -11:45** | **45 min** | **The Great Value of Clinical Laboratories in the Pandemic Process**<br>**MINDRAY Satellite Symposium**<br>***Chairperson: Dr. Oguzhan Zengi***<br>***Speaker: Dr. Sergio Bernardini, Italy*** |
| ***11:45 - 12:55*** | ***70 min*** | ***KEYNOTE 3***<br>***Chairperson: Abdurrahman Coskun*** |
| 11:45 - 12:15 | 30 min | Epithelial Barrier Hypothesis and Autoimmunity, Allergy and Other Chronic Conditions<br>***Cezmi Akdis, Switzerland*** |
| 12:15 - 12:45 | 30 min | Mechanisms that Trigger or Break Allergen-Specific Tolerance<br>***Mubeccel Akdis, Switzerland*** |
| 12:45 - 12:55 | 10 min | Questions & Answers |
| **12:55 - 13:55** | **60 min** | **Lunch Break I Exhibition Area & Poster Visit** |
| **13:55 - 14:40** | **45 min** | **KEYNOTE 4**<br>***Chairperson: Hilal Kocdor***<br>Recombinant DNA Technology and Development of Biopharmaceutical Medicines<br>***Sadettin Ozturk, USA*** |
| **14:40 - 15:25** | **45 min** | **Clinical Decision Support System and Applications in the Laboratory**<br>**ABBOTT Satellite Symposium**<br>***Chairperson: Assoc. Dr. Halef Okan Dogan***<br>***Speaker: Umar Ansari / Professional Services Manager (CSO) / Abbott*** |
| **15:25 - 15:55** | **30 min** | **Coffee Break & Exhibition Area & Poster Visit** |
| **15:55 - 17:25** | **90 min** | **WORKSHOP**<br>***Chairperson: Aylin Sepici Dincel & Oytun Portakal***<br>Errors Authors Make When Writing Scientific Papers<br>***Thomas Annesley, USA*** |
| **20:30 - 24:00** | | **Republic Day of Turkey -**<br>**October 29 Gala Dinner and Nazmi Ozer Science Award Ceremony** |

# SCIENTIFIC PROGRAM

## 29 October 2021, Friday

HALL B

**09:00 - 10:30** | **90 min**

**Oral Presentation Session 7**

***Chairpersons: Eray Metin Guler & Soycan Mizrak***

**S-104** EVALUATION OF RELAXIN AND SEROTONIN LEVELS IN LABOUR IN WATER AND LABOUR WITH EPIDURAL ANESTHESIA, ***Tuba Candar***

**S-105** INVESTIGATION OF ALTERATIONS IN SERUM NESFATIN-1, ADIPONECTIN AND FIBROBLAST GROWTH FACTOR 21 LEVELS IN CHILDREN DEPENDING ON BODY MASS INDEX, ***Baran Bincan***

**S-106** DETERMINATION OF GESTATIONAL DIABETES MELLITUS FREQUENCY IN DIFFERENT ETHNIC POPULATIONS, ***Gul Kirtil***

**S-107** RATIONAL USE OF LABORATORY TEST REQUEST PROCEDURE: GLYCOSYLATED HEMOGLOBIN, ***Habib Ozdemir***

**S-108** APPLICATION OF PATIENT BASED REAL TIME QUALITY CONTROL (PBRTQC) METHODS FOR GLUCOSE, OPTIMIZATION AND VALIDATION OF APPLIED QUALITY CONTROL METHODS, ***Ilknur Alkan Kusabbi***

**S-109** INVESTIGATION OF THE INTERFERENCE EFFECT OF GLYPHOSATE ON THE MEASUREMENT OF TRIGLYCERIDES IN SERUM BY THE ENZYMATIC METHOD, ***Zeynep Tan***

**S-110** THE IMPORTANCE OF CALCULATED LIPID PARAMETERS IN CORONARY ARTERY DISEASE: PRELIMINARY STUDY, ***Semih Fazli Kayahan***

**S-165** SERUM CHEMERIN AND SFRP5 LEVELS IN PATIENTS WITH SUBCLINICAL HYPOTHYROIDISM, ***Koksal Serefli***

**S-111** ROLE OF INFLAMMATORY BIOMARKERS IN NEPHROPATHY AND ATHEROSCLEROSIS IN TYPE 2 DIABETES MELLITUS PATIENTS WITH MICROALBUMINURIA, ***Hasip Cirkin***

**S-112** SERUM AND TISSUE LEVELS OF ANGIOGENESIS-RELATED NITRIC OXIDE, ENDOTHELIAL NITRIC OXIDE SYNTHASE AND ENDOTHELIN-1 IN DIFFUSE INFILTRATIVE GLIAL TUMORS, ***Taylan Turan***

**S-113** {IN VITRO} AND {IN SILICO} INVESTIGATIONS FOR THE ANTICHOLINESTERASE EFFECTS OF SOME IMIDAZOLE DERIVATIVES, ***Didem Akkaya***

**S-114** EVALUATION OF THE EFFECT OF CLOMYPHEN CITRATE APPLICATION ON TWO-DIMENSIONAL AND THREE-DIMENSIONAL SPHEROID MODEL MCF-7 BREAST CANCER CELLS, ***Gamze Turna Saltoglu***

**S-116** TINY TROJAN HORSES: SYNTHESIS, CYTOTOXICITY, AND BIOAVAILABILITY OF SILVER NANOPARTICLES, ***Serdar Karakurt***

**14:40 - 15:55** | **75 min**

**SCIENCE EDUCATION SESSION**

***Chairpersons: Aylin Sepici Dincel, Ferhan Girgin Sagin***

Raising Future Scientists and Artists: The opportunities and innovations of Kizilculu Science and Art Center and the internationalization of gifted students with BUCA IMSEF

***Cansu Ilke Kuru, Belit Karaca***

Evaluation of Awareness of Ionizing Radiation in High School Students

***Merve Girgin***

**Science education in Turkey and in the world, Public awareness, Road maps for a better education and a better future**

**15:55 - 19:00** | **185 min**

**Oral Presentation Session 8-9**

***Chairpersons: Oguzhan Zengi & Fulden Ulucan Karnak***

**S-117** INVESTIGATION OF GLYCOSYLATION PATTERNS OF MUTANT AVP PRECURSORS R, ***Dilara Vaizoglu***

**S-118** INVESTIGATION OF THE RELATIONSHIP BETWEEN ASIC3 GENE POLYMORPHISM AND FIBROMYALGIA SYNDROME, ***Cemile Zontul***

**S-119** DETERMINATION OF EXPORTIN5 (XPO5) GENE POLYMORPHISM IN COLON CANCER PATIENTS, ***Tugba Agbektas***

**S-120** GENETIC HETEROGENITY OF HEMOGLOBIN H DISEASE IN CUKUROVA REGION, ***Yusuf Dogus***

**S-121** CRISPR-CAS9 MEDIATED KNOCKOUT OF MIR-27A REVEALS ITS ESSENTIAL ROLES IN INSULIN SIGNALING PATHWAY, ***Gokhan Sadi***

**S-122** OXIDATIVE STRESS AND INFLAMMATION IN ANKYLOSING SPONDYLITIS PATIENTS, ***Ali Imran Dastan***

**S-123** THE ROLE OF OXIDATIVE STRESS, ANTIOXIDANT LEVEL AND CELLULAR IMMUNITY IN INDIVIDUALS WITH HASHIMOTO'S THYROIDITIS, ***Cigdem Cicek***

# SCIENTIFIC PROGRAM

## 29 October 2021, Friday — HALL B

**S-124** ANTIOXIDANT AND ANTIBACTERIAL POTENTIALS OF NEW ARIL SULFONYL HYDRAZONE DERIVATIVES, ***Mehmet Kursad Ozturk***
**S-125** THE EFFECT OF ANTI-TNF ALPHA THERAPY ON OXIDATIVE STRESS PARAMETERS IN ANKYLOSING SPONDYLITIS PATIENTS, ***Mehmet Akif Bozdayi***
**S-127** INVESTIGATION OF 8-ISOPROSTAGLANDIN AND RAFTLIN LEVELS IN SEMINAL FLUID SAMPLES OF FERTILE AND INFERTILE CASES, ***Meltem Gungor***
**S-128** OXIDATIVE STRESS METABOLISM IN BOTH MITOCHONDRIA AND CYTOSOL OF THE BRAIN AND SPINAL CORD TISSUES IMPAIRED IN SOD1G93A ALS RATS AS A RESULT OF MUTANT SOD1G93A PROTEINS, ***Nuray N Ulusu***
**S-172** THE ROLES OF BUN/D-DIMER AND BUN/LACTATE RATIOS IN INDICATING MORTALITY IN INTENSIVE CARE PATIENTS WITH COVID-19, ***Soycan Mizrak***
**S-129** CREATINE SUPPLEMENTATION WITH EXERCISE EXHIBIT TISSUE-SPECIFIC EFFECTS ON RESPONSE TO OXIDATIVE STRESS, ***Abdullah Taskin***
**S-131** BLOOD AND SERUM BIOMARKERS CORRELATED WITH SEVERITY AND MORTALITY OF COVID-19 INFECTION IN THE ELDERLY PATIENTS, ***Duygu Aydemir***
**S-132** LOW VITAMIN B12 LEVELS IN SAMPLES FROM FAMILY HEALTH CENTERS, ***Bilal Ilanbey***
**S-133** CASE REPORT: ABNORMAL HEMOGLOBIN VARIANT WITH ERYTHROCYTOSIS HEMOGLOBIN ANDREW MINNEAPOLIS, ***Pinar Yilmaz***
**S-018** EVALUATION OF SERUM ADIPOCYTOKINE AND IL-18 LEVELS IN PATIENTS WITH EPILEPSY RECEIVING AND NOT RECEIVING ANTIEPILEPTIC TREATMENT, ***Ahmet Donder***
**S-135** SERUM NO, S100B, NSE CONCENTRATIONS IN MIGRAINE AND THEIR RELATIONSHIP, ***Sedat Yilmaz***
**S-136** EVALUATION OF HOMOCYSTEIN THIOLACTONASE (HTLASE), PARAOXONASE (PON-1) AND ARYL ESTERASE (ARE) ENZYME ACTIVITIES IN PEDIATRIC STROKE PATIENTS, ***Neslihan Cihan Calisgan***
**S-137** INVESTIGATION OF THE RELATIONSHIP BETWEEN ONE CARBON METABOLISM AND NITRIC OXIDE METABOLISM IN PEDIATRIC MIGRAINE AND TENSION TYPE HEADACHE, ***Aysenur Macun Ayan***
**S-138** APPLICATION OF SAMPLES FROM MINICOLLECT 9NC COAGULATION TUBES AND BD VACUTAINER CITRATE TUBES USED IN COAGULATION TESTING, ***Murat Cihan***
**S-139** DETERMINATION OF 17-ALPHA-HYDROKSIPROGESTERONE REFERENCE RANGE IN PEDIATRIC AGE GROUP BY LC-MS\MS METHOD, ***Emir Matpan***
**S-141** COMPARISON OF TWO DIFFERENT REAGENTS ANALYZING WITH THE SAME METHOD IN SERUM TOTAL IMMUNOGLOBULIN E MEASUREMENT: PRELIMINARY STUDY, ***Saliha Uysal***
**S-142** INVESTIGATION OF PLASMA SPEXIN LEVELS IN ALZHEIMER'S DISEASE, ***Nazli Koc***
**S-143** BUTYRYLCHOLINESTERASE ACTIVITY AND DOPAMINE, OXYTOCIN LEVELS IN ALZHEIMER DISEASE: A PRELIMINARY STUDY REPORT, ***Durmus Ayan***
**S-001** ANKARA GULHANE TRAINING AND RESEARCH HOSPITAL EMERGENCY BIOCHEMISTRY LABORATORY EVALUATION OF SERUM ETHANOL LEVEL MEASUREMENT UNCERTAINTY, ***Ahmet Rifat Balik***

## 29 October 2021, Friday — HALL D

**14:00 - 17:00** **180 min**

**WORKSHOP / COURSE**
From Theory to Practice Control and External Quality Evaluation: Problems and Solutions

***Instructors:***
***Muhittin Serdar, Dogan Yucel***

# SCIENTIFIC PROGRAM

## 30 October 2021, Saturday

### HALL A

| | | |
|---|---|---|
| **09:00 - 10:30** | **90 min** | **POSTGRADUATE BIOCHEMISTRY EDUCATION SESSION**<br>***Chairpersons: Ferhan Girgin Sagin, Muhittin Serdar***<br>**FORUM**<br>AGENDA IN TRAINING AND EDUCATION OF MED. SPEC., MS AND Ph.D.: PROBLEMS, SOLUTIONS, AND SHARING OF EXPERIENCES<br>***Gunnur Dikmen & Umut Akyol & Aylin Sepici Dincel & Mubeccel Akdis*** |
| **10:30 - 11:00** | **30 min** | **Coffee Break & Exhibition Area & Poster Visit** |
| **11:00 - 11:45** | **45 min** | **KEYNOTE 5**<br>***Chairperson: Fatma Meric Yilmaz***<br>Clinical Testing for Early Detection and Management of Sepsis<br>***Sedef Yenice*** |
| **11:45 - 12:30** | **45 min** | ***New Mass Spectrometry Workflows and Fragmentation Pathways for The In-Depth Analysis of Complex Samples***<br>**SCIEX Satellite Symposium**<br>***Speaker: Volker Kruft, Senior Manager Business Development SCIEX*** |
| **12:30 - 13:30** | **60 min** | **Lunch Break I Exhibition Area & Poster Visit** |
| **13:30 - 14:15** | **45 min** | **GOOD PRACTICES IN BIOCHEMISTRY EDUCATION**<br>***Chairperson: Aylin Sepici Dincel***<br>An Example of Active Learning in Graduate Education: Molecular Biology Techniques<br>***Sevcan Atay***<br>Learning Urinalysis in the Comfort of Home: Findings from a Pilot Study<br>***Ali Burak Ozkaya***<br>Flipped Learning" Approach in Medical Biochemistry Laboratory: Medical Student Achievement and Attitudes<br>***Rabia Semsi, Aylin Sepici Dincel*** |
| **14:15 - 15:45** | **90 min** | **SYMPOSIUM 4**<br>**INHERITED METABOLIC AND NEUROIMMUNOLOGICAL DISEASES**<br>***Chairpersons: Eyup Ilker Saygili & Sabahattin Muhtaroglu*** |
| 14:15 - 14:35 | 20 min | Importance of Amino Acid Chromatograms in Urea Cycle Defects and Contribution to Diagnosis<br>***Tijen Tanyalcin*** |
| 14:35 - 14:55 | 20 min | Disorders of Bile Acid Metabolism and Laboratory<br>***Incilay Lay*** |
| 14:55 - 15:15 | 20 min | Organic Acidemias: Clinic and Laboratory<br>***Ozlem Unal Uzun*** |
| 15:15 - 15:35 | 20 min | Clinical Tests Used in the Diagnosis and Follow-up of Neuroimmunological Diseases<br>***Zubeyde Erbayraktar*** |
| 15:35 - 15:45 | 10 min | Questions & Answers |
| **15:45 - 16:15** | **30 min** | **Coffee Break & Exhibition Area & Poster Visit** |
| **16:15 - 17:00** | **45 min** | **KEYNOTE 6**<br>***Chairperson: Incilay Lay***<br>The Role of Metabolomics for the Investigation of Inborn Errors of Metabolism<br>***Roy Peake, USA*** |
| **17:00 - 17:15** | **15 min** | **CLOSING CEREMONY** |

# SCIENTIFIC PROGRAM

## 30 October 2021, Saturday

HALL B

**09:00 - 10:30** | **90 min**

**Oral Presentation Session 10**

***Chairpersons: Elif Isbilen & Hasan Ulusal***

**S-144** EFFECT OF RESVERATROL ON MID-REGIONAL PROADRENOMEDULLIN, MALONDIALDEHYDE AND INDUCTABLE NITRIC OXIDE SYNTHASE IN A DIABETIC RAT MODEL, ***Fatih Hacimustafaoglu***

**S-146** PURIFICATION OF LIPASE ENZYME FROM BOVINE PANCREAS AND INVESTIGATION OF INHIBITION EFFECTS OF PROPOLIS EXTRACTS ON THIS ENZYME ACTIVITY, ***Zeynep Bayat Sarioglu***

**S-147** INVESTIGATION OF THE RELATIONSHIP BETWEEN PRIMARY HEADACHE SEVERITY AND DAILY FOOD PREFERENCES IN YOUNG ADULTS NOT YET DIAGNOSED WITH MIGRAINE, ***Duygu Vardagli***

**S-148** ZINC DEFICIENCY: WHICH MATRIX SHOULD WE USE?, ***Aslihan Cavunt Bayraktar***

**S-149** THE INVESTIGATION OF SERUM SSORTILIN AND ADAM LEVELS IN THE RELATIONSHIP BETWEEN CORONARY ARTERY DISEASE AND SEVERITY, ***Ebru Yaprak***

**S-150** EVALUATION OF ASYMMETRIC DIMETHYLARGININE AND NEOPTERIN IN PATIENTS WITH IRON DEFICIENCY ANEMIA, ***Burcu Baba***

**S-151** MEASUREMENT OF CARDIAC TROPONIN I IN HUMAN SERUM, ***Merve Oztug***

**S-152** INTERFERENCE EFFECT OF HEMOLYSIS ON HIGH SENSITIVE TROPONIN T LEVELS HILMI, ***Furkan Arslan***

**S-153** AWARENESS EVALUATION OF THE RATIONAL LABORATORY USE PROJECT IN VAN PROVINCE TERTIARY UNIVERSITY HOSPITAL, ***Halil Ibrahim Akbay***

**S-154** EVALUATION OF LABORATORY PANIC VALUE REPORTING EFFICIENCY IN VAN PROVINCE TERTIARY UNIVERSITY HOSPITAL, ***Bunyamin Ucar***

**S-155** RELATIONSHIP BETWEEN BRUCELLOSIS AND VITAMIN D, FERRITIN, FOLIC ACID, ***Ilhan Sabancilar***

**S-175** NANOBIOTECHNOLOGY BASED RESEARCH IN THE LAST DECADE: EVALUATION OF THE RELATED PUBLICATIONS AND PATENTS, ***Fulden Ulucan Karnak***

**14:15 - 15:45** | **90 min**

**Oral Presentation Session 11**

***Chairpersons: Serkan Bolat & Habib Ozdemir***

**S-156** THE RELATIONSHIP BETWEEN FASTING BLOOD GLUCOSE LEVEL AND INTRA-ERYTHROCYTE ANTIOXIDANT AND SELENIUM LEVELS IN TYPE I AND TYPE II DIABETICS, ***Hail Ibrahim Ozkan***

**S-158** EVALUATION OF HEMATOLOGIC INDICES FOR DISCRIMINATION BETWEEN BETA THALASSEMIA TRAIT AND IRON DEFICIENCY ANEMIA, ***Gizem Yilmaz Calik***

**S-160** EVALUATION OF LUPUS ANTICOAGULANT POSITIVITY IN COVID-19 PATIENTS, ***Oguzhan Zengi***

**S-161** INVESTIGATION OF THE CORRELATION OF INTERLEUKIN 6 AND C–REACTIVE PROTEIN IN THE FOLLOW-UP OF COVID-19 POSITIVE PATIENTS, ***Oya Gezer***

**S-162** EVALUATION OF PREANALYTIC PROCESS OF BLOOD SAMPLES SENT TO BIOCHEMISTRY LABORATORY IN SANLIURFA MEHMET AKIF INAN EDUCATION AND RESEARCH HOSPITAL, ***Ugur Fahri Yurekli***

**S-163** EARLY GROWTH RESPONSE PROTEIN (EGR) LEVELS IN PATIENTS WITH FIBROMYALGIA SYNDROME, ***Ayca Tas***

**S-164** EVALUATION OF SOME BIOCHEMISTRY AND HEMOGRAM PARAMETERS THAT CAN BE USED IN THE DIAGNOSIS OF COVID-19, ***Fatma Sengul***

**S-166** COMPATIBILITY OF GLUCOSE/POTASIUM RATIO WITH OGTT IN DIAGNOSIS OF DIABETES, ***Filiz Alkan Baylan***

**S-167** EXAMINATION OF THE RELATIONSHIP BETWEEN CORTISOL LEVELS AND SODIUM, POTASSIUM, CHLORINE, AND GLUCOSE LEVELS, ***Sibel Soylemez***

**S-168** COMPARISON OF THE TRIGLYCERIDE- GLUCOSE INDEX AS AN ALTERNATIVE MARKER FOR INSULIN RESISTANCE IN OBESE WOMEN, ***Mehmet Fatih Alpdemir***

# SCIENTIFIC PROGRAM

## 30 October 2021, Saturday

HALL B

**16:15 - 17:00** | **45 min**

**Oral Presentation Session 12**

***Chairpersons: Yakup Dulgeroglu & Zihni Onur Uygun***

**S-169** MAY BLOOD GROUPS AFFECT COVID-19 SENSITIVITY?, ***Alpaslan Ozturk***

**S-170** LYMPHOCYTE SUBGROUP ANALYSIS BY FLOW CYTOMETRIC METHOD IN PATIENTS DIAGNOSED WITH COVID 19, ***Oguzhan Ozcan***

**S-171** EVALUATION OF LABORATORY TESTING PROCESS DURING THE COVID-19 PANDEMIC, ***Cemil Nural***

**S-173** PROGNOSTIC AND DIAGNOSTIC VALUES OF NEUTROPHIL-LYMPHOCYTE COUNT AND PERCENTAGE IN COVID-19 PATIENTS, ***Serkan Bolat***

**S-174** EVALUATION OF ANTIBODY LEVELS INDUCED BY SARS-COV-2 INFECTION OR COVID-19 VACCINATION, ***Ozlem Unay Demirel***

# INVITED SPEAKER ABSTRACTS

**IS-001**
**IFCC Vision and Strategic Direction: Advancing excellence in laboratory medicine for better healthcare worldwide**

Khosrow Adeli
University of Toronto, Toronto, Canada

IFCC is the largest worldwide organization in the field of laboratory medicine and continues to focus its mission of "advancing excellence in laboratory medicine for better healthcare worldwide". Over the past year, it has been making significant strides towards by promoting the value of laboratory medicine, impacting healthcare delivery and patient outcomes, contributing to global lab quality, becoming the largest provider of free distance learning in the field of laboratory medicine, and aiding in the fight against the COVID-19 pandemic.
Several projects have been initiated to meet the goals of the strategic plan. First, IFCC is working to gather evidence to demonstrate the value of laboratory medicine in healthcare delivery, particularly in the context of clinical decision-making. Projects have also been initiated to directly impact healthcare delivery, such as the global newborn screening program, which aims to support newborn screening in developing countries. To improve global lab quality, the IFCC is also planning to initiate programs to assist clinical laboratories in improving internal and external quality assurance (IQC and EQA) in developing countries as well as create a global reference interval database to support reference interval harmonization. Another key component of the strategic plan is to improve distance learning opportunities for IFCC members around the world, and thus the IFCC has been hosting live biweekly or monthly webinars on a variety of laboratory medicine topics. Last but not least, IFCC has been very active in supporting the fight against the COVID-19 pandemic by summarizing, critically reviewing, and disseminating the most up-to-date, evidence-based information about the novel coronavirus. A number of evidence-based guidelines have also been published by IFCC in the areas of lab biosafety and laboratory testing to support the important work of clinical laboratories around the world.
Ultimately, in all our endeavors, IFCC is committed to encouraging and supporting a culture of innovation and increasing productivity. In this brief presentation, I will provide information about IFCC projects, their potential impact, progress made so far, and future directions.

**IS-002**
**European Federation of Laboratory Medicine (EFLM), Activities and Projects**

Tomris Ozben
Department of Medical Biochemistry, Akdeniz University Faculty of Medicine, Antalya, Turkey

EFLM is dedicated to advancing Laboratory Medicine as a profession and to promote the highest quality standards of laboratory practice to deliver the best patient care. EFLM provides European leadership in Clinical Chemistry and Laboratory Medicine to national professional societies, diagnostic industry and governmental and non-governmental organisations in order to serve the public interest in health care. EFLM has 41 Full Members, 7 Affiliate Members, and 1 Provisional Member. EFLM creates a platform representing around 29.000 European Specialists of Laboratory Medicine. 220 officers (Chairs, Members, Corresponding Members, Experts and IVD representatives) work voluntarily at 2 Task Forces, 5 Committees, 14 Working Groups, 4 Task Groups, 2 Task&Finish Groups. Young Scientist members are currently active members of the EFLM Working Groups. I mention briefly the main activities of EFLM related to education, research, development of the profession, requirements for competence, quality and accreditation of laboratories, organisation of congresses, and publications. EFLM Academy was established to support education, training and continuous professional development of laboratory medicine practitioners in Europe by providing a unique, exclusive web-based resource and communication platform. The Register is the database of Specialists in Laboratory Medicine across Europe (EuSpLM). Holders of the title EuSpLM are widely recognised across Europe as individuals with high levels of knowledge, skills and competence. The EFLM Syllabus Course is top quality revision course designed to increase the knowledge and exam confidence for postgraduate students or for any person looking to enhance knowledge on a specific topic in clinical chemistry and laboratory medicine. It is a comprehensive repository of lectures provided by the esteemed experts and well-known scientists from all around the world. The EFLM Task Force on Disruptive Technologies in Laboratory Medicine (TF-DT) aims to develop strategies for the integration of technologies changing Laboratory Medicine into standard diagnostic care within the Federation and between EFLM member societies and other targeted audiences. EFLM recently became a member of BioMed Alliance, a non-profit organization representing over 30 leading European research and medical societies involved in both diagnostic and therapeutic care of all EU citizens. Task Force: European Regulatory Affairs (TF-ERA) takes a proactive role in the transitioning to IVDR implementation per May 2022. EFLM e-learning platform has been designed recently by experts for the selection of interactive, web-based, educational resources. EuroLabNews is the bi-monthly newsletter of EFLM with the aim to strengthen the communication with National Societies and their members. Biological Variation Database is managed by the EFLM Working Group on Biological Variation (WG-BV) and the Task Group for the Biological Variation Database (TG-BVD) with the objective to appraise the quality of BV data that is publicly available. Its terms of reference were to develop a critical appraisal list for the evaluation of BV studies, to use this to assess the existing literature on BV and to extract essential information from those papers and to summarize the results. EFLMLabX is the EFLM professional exchange initiative: a platform where Specialists in Laboratory Medicine can search training opportunities in Europe. A number of bursary programs to attend the main EFLM events are also available.

**IS-003**
**Diets, Mitochondria, and Calcium: A Metabolic Triad**

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In humans, obesity is associated with increased incidence of a variety of age-related diseases. Similarly, laboratory rodent lifespans are limited by obesity, including that promoted by ad libitum access to standard chow diets. Indeed, a daily limitation of caloric intake (calorie restriction) has been widely shown to enhance lifespans and prevent age-related diseases in rodents. We will discuss the metabolic effects of caloric restriction, and show that mitochondrial form and function, specifically calcium transport, are regulated by caloric restriction. We will also demonstrate that changes in energy metabolism promoted by this dietary intervention prevent age-related diseases and modifications in different tissues. Overall, our results show that caloric intake, mitochondrial form and ion transport are intimately interconnected, presenting central regulatory roles in age-related diseases.

**IS-004**
**The Fate of the Cell that Cannot Die: Cancer**

Engin Ulukaya
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One of the hallmarks of cancer cell is the resistance to natural cell death, in other words, apoptosis. A cell can escape from cell death through various mechanisms (mutations on cell death receptors, over expressions of antiapoptotic molecules, inappropriate expression of proapoptotic molecules, over expression of telomerase, negligence by immune cells etc) Cell death has long been omitted. However, it gained an importance since 1990s due to the link between cell death and carcinogenesis. Moreover, there is another close association between cell death/apoptosis and the therapy (response to it, or monitorisation of therapy). At the beginning, discovery of caspase-cleaved cytokeratin 18 made a big impact on the monitorisation of therapy and the prediction of both the response to treatment and the survival. However, this impact lost its importance at the later stage because of the big variation of cytokeratin 18 levels among people. That is why it has no clinical utility at the moment. The other main reason is the possibility of different cell death modalities ongoing following the chemotherapy. Response to treatment via various cell death mechanisms is a hot area in cancer research because there could be a chance to modify the treatment according to the intact cell death modality in a given patient. For example, if the apoptotic machinery is broken, then necrosis-causing drugs may apply to the patients. This is possibly a new dimension in cancer field. To achieve this, cell death mechanisms should be explored in patients and then the therapy should be designed accordingly.

**IS-005**
**Why Preclinical Studies of Cancer are not implemented on the Clinic: Usual Suspects and New Players**

Ali Burak Ozkaya
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There is an alarming concern regarding reliability of the published research findings which is particularly evident in preclinical cancer studies where the clinical translatability is minimal. This low efficiency in research has been discussed extensively in recent years and the lack of reproducibility and overall quality are agreed upon as the main culprits of the problem. Reproducibility in preclinical research is estimated to be between 10% to 25% and the cost of irreproducible research is calculated to be at least 28 billion USD/year in USA alone. There are many factors contributing to this crisis including lack of robustness, biased design, use of inadequate models (cell line and/or animal), underpowered studies (insufficient sample size), lack of proper controls, poor use of statistics and the absence of replication/confirmation studies. It is important to note that these design problems often expand to questionable research practices

such as p-hacking and cherry picking. Even though understanding key concepts and methods for reporting data has been suggested to be critical to preserve scientific findings, one important aspect of the process, the compatibility of the way the manuscript was written with the actual experimental design, has been overlooked. When we investigated the relationship between the claims of the studies and the evidence provided to support these claims, we observed that the evidence provided by high-impact cell culture studies does not sufficiently support the claims authors asserted in their manuscript. This is partly due to the lack of a consensus terminology regarding the meaning of claims such as cytotoxicity or proliferation rate as well as misconceptions regarding what commercial assays actually measure. We need guidelines clarifying terminology to ensure meticulously written materials and methods sections and careful selection and utilization of cell culture methods to raise robustness and overall quality of preclinical research.

**IS-006**
**High Sensitivity Cardiac Troponin: Need for Collaboration Between Laboratory Medicine and Clinical Practice / Discussions on Recent ESC NSTEMI & NICE Guidelines**

Fred Apple
Hennepin Healthcare/Hennepin County Medical Center, Minneapolis, USA

The goal of my presentation will be to better understand the clinical utilization of high-sensitivity (hs) cardiac troponin (cTn) in detecting myocardial injury and as an aid in the diagnosis of acute myocardial infarction, to appreciate new scientific data pertaining to a novel whole blood point of care (POC) hs-cTnI assay and share key insights addressing the collaborative process between laboratory medicine and emergency medicine in implementing a POC hs-cTnI assay.

**IS-007**
**Pediatric Reference Intervals: Gaps and Recent Advances**

Khosrow Adeli
University of Toronto, Toronto, Canada

Clinical laboratory reference ranges serve as health-associated benchmarks that enable clinicians to interpret laboratory test results and facilitate clinical decision-making. Unfortunately, critical gaps currently exist in accurate and up-to-date pediatric reference ranges for accurate interpretation of laboratory tests performed in children and adolescents, which may contribute to erroneous diagnosis or misdiagnosis of many diseases. Several initiatives have been established internationally to address these gaps, including the KiGGS initiative in Germany, the Aussie Normals in Australia, the AACC-National Children Study in the USA, the NORICHILD Initiative in Scandinavia, and the Canadian Laboratory Initiative on Pediatric Reference Intervals (CALIPER) program in Canada.
Since 2009, CALIPER has recruited more than 12,000 healthy children and adolescents, thereby establishing a comprehensive database of pediatric reference ranges for over 185 biomarkers of health and disease (www.caliperdatabase.org). However, evidence gaps continue to exist for special markers and new laboratory instruments. To address these gaps, our team has recently completed or is currently undertaking studies to establish pediatric reference ranges for: 1) chemistry and immunological markers on new analytical systems (Abbott Alinity, Siemens Attelica), 2) hematological markers on multiple platforms (Sysmex, Beckman, Mindray), 3) critical care markers on point of care testing platforms, 4) markers of inflammatory disease (cytokines, calprotectin, autoimmune), 5) markers of nutritional deficiency (essential trace elements), and 6) markers of environmental toxicity (heavy metals). CALIPER is also embarking on specific sub-studies regarding maternal, child, and adolescent health, such as the Mother & Child Health Initiative, COVID-19 Seroprevalence Study, and Lipid Metabolism in Adolescents with obesity. In this presentation, I will review the recent worldwide initiatives on pediatric reference ranges as well as discuss the concept and feasibility of common reference ranges. I will also discuss the progress made by the CALIPER program, the CALIPER database, and future research directions.

**IS-008**
**The Story of the Discovery of 4 New Genes, Mutations of which Cause Hereditary Nephropathy, in Hacettepe**

Fatih Ozaltin
Hacettepe University Faculty of Medicine Pediatric Nephrology and Pediatric Rheumatology, Ankara,Turkey

A large fraction of early-onset chronic kidney disease (CKD) is known to be monogenic in origin. To date almost 450 monogenic disorders genes, if mutated, are known to cause CKD, explaining about 30% of cases in pediatric cohorts, and about 5-30% in adult cohorts. Thus, hereditary kidney disorders take a very significant place in nephrology and therefore necessitates awareness by the nephrologists in order to correct diagnosis and appropriate patient management.
Hacettepe University Nephrogenetics Laboratory is the first nephrogenetics laboratory of Turkey that has been dedicated to these studies specifically. The laboratory has been founded by a Hacettepe University Infrastructure Project in 2009. This laboratory serves not only to Hacettepe patients but also to other nephrology centers in Turkey in order to better patient care. As such, it contributes significantly to the diagnosis and treatment of the patients and thereby to the practice of individualized medicine.
In this context, it has been established a DNA and data archive from more than 6000 individuals from more than 2400 families. In those families in whom routine diagnostic genetic tests fail to uncover underlying genetic disorders, we perform advance studies in order to identify novel genes leading to hereditary kidney disease when mutated. In this talk, four novel genes (PTPRO, DGKE, ANKS6 and ADCK4) that have been found using this strategy are introduced; while their story of the identification is summarized, the importance of the subject will be emphasized.

**IS-009**
**FORUM: Prof. Dr. Kadir Okhan Akin Session**
**AGENDA IN CLINICAL BIOCHEMISTRY EXPERTISE: ISLAB AND CITY HOSPITALS**

Cemal Kazezoglu
Kanuni Sultan Suleyman Training and Research Hospital, Istanbul, Turkey

With the ISLAB Project, reorganizing the laboratory service provided in the fields of biochemistry and microbiology in the Affiliated Health Facilities of the Istanbul Health Directorate and ensuring the same quality and standard laboratory service in the 1st/2nd/3rd Stage Healthcare facilities, determining the scope of the laboratory within the framework of cost-benefit principles, workflow and it is aimed to create working algorithms.
With the harmonization of the Biochemistry and Microbiology laboratory service throughout the province, it has been tried to provide access to the service for our clinician stakeholders at all stages. Rational test request management, standard laboratory work algorithms, common goals and policies, purchasing discipline have been established. Within the scope of the project, 4 regional central laboratories were established. The systems and devices installed in these laboratories are unique in size and capacity. Some devices were installed for the first time in Turkey.
ISLAB project, which includes preanalytical innovations such as ready-made barcode application, also makes positive contributions to pandemic laboratory management.

**IS-010**
**FORUM: Prof. Dr. Kadir Okhan Akin Session**
**AGENDA IN CLINICAL BIOCHEMISTRY EXPERTISE: ISLAB AND CITY HOSPITALS**

Huriye Serin
Prof.Dr.Cemil Tascioglu City Hospital, Istanbul, Turkey

BACKGROUND AND AIM: Rational Use of Laboratory Project was started in 2018 by the Republic of Turkey Ministry of Health General Directorate of Health Services Department of Examination and Diagnosis Services. Project; It aims to ensure the correct diagnosis of the patient, to increase the clinical usefulness of the test results, to prevent unnecessary test requests, In project scope; Where is this test done? System, Test Request Procedure, Consultation Request Procedure, Approval Support System, Reflex and Reflective Test, Decision Limit-Critical Value, Harmonization of Measurement Units, Result Report Standardization. Our aim in this study is to determine the rate of implementation of the rational laboratory use project in medical biochemistry laboratories, and to contribute to new regulations by getting the information and opinions of the laboratory experts participating in the survey.
METHODS:35 questionnaire questions were prepared to cover the Rational Laboratory Use Project. The survey questions were shared with 20 experts and necessary arrangements were made with the suggestions of the experts and uploaded electronically online (SurveyMonkey®, San Mateo, ABD). With an open-ended question, the participants were given the opportunity to answer without limit.
RESULTS: Questionnaire filled by 213 laboratories. 11 of them could not be evaluated because they did not fill in the questionnaire within the specified time. 82.12% of 151 participants answered no to the question "Do you apply Approval Support System in your laboratory?". 55.65% of the 124 participants asked, 'Did you define a consultation for your laboratory in HIS (Hospital Information System)?' answered yes to the question. 70.49% of the 122 participants answered no to the question "Does your consultation practice continue actively?". 57.69% of the 130 participants answered, "I agree" to the statement "I think the rational laboratory use project is feasible". It was observed that the experts tried to implement rational laboratory practices partially depending on their laboratory capacity, institution management and LIS (Laboratory Information System).
CONCLUSIONS: According to the results of the survey, training of HIS and LIS

companies on the subject and regular inspection by the Ministry of Health about how much they implement the applications will make a significant contribution to the 'rational laboratory use project'.

**IS-011**
**COVID-19: Is It a Biological Weapon?**

Levent Kenar
Health Sciences University Gulhane, Ankara, Turkey

According to official sources, the COVID-19 epidemic caused by the new type of coronavirus, which started in the late December 2019 in the city of Wuhan, China, as atypical pneumonia cases of unknown origin, then spread to Iran, then to all of Europe and the United States through Italy, and finally to the whole world. It has become widespread in our country after the March 2019 and has become the main agenda of our social life with the quarantine and isolation measures that have been gradually expanded. Scientists have put forward many thoughts and findings about the origin and evolution of the virus since the epidemic first broke out, and on the other hand, they sought an answer to the question of whether it is a biological weapon produced in the laboratory. Hypotheses about whether the virus was created by nature as a result of natural selection or whether it is a human-made virus still remain on the agenda. Although it is prohibited by international signed conventions, the possibility of producing the coronavirus for the purpose of using as a biological weapon or revealing the origin of the virus will also include the answers to what our future will be like in this epidemic and thereafter. In this presentation, the concept of biological warfare, the characteristics of biological weapons, and in this context, where the COVID-19 epidemic is in these concepts, and the evaluation of the virus in terms of biological weapons will be evaluated.

**IS-012**
**COVID-19 Vaccines: Efficacy, Safety and Future Prospects**

Erkan Ozcengiz
Director of Vaccine Department, Pharmada Co., Ankara, Turkey

SARS-CoV-2 still remains to be the cause of the Covid-19 pandemic, with more than 200 million infections and over 4.5 million deaths worldwide. With the onset of this pandemic, vaccine development efforts began on an unprecedented scale in the world, and it was seen that some vaccines received global application permissions in a very short period of time. For now, it has been proven that current COVID-19 vaccines are highly effective in protecting against serious illness and death. However, there remains much to learn about the immune response of vaccines and the duration of protection, and how we can further optimize vaccines against new variants.
As of today, some inactivated vaccines (eg. Sinovac, Sinopharm, BharatBiotech), mRNA vaccines (eg.Pfizer&Bionthec, Moderna), Non-Replicating Viral Vector ones (eg. Oxford, Astra- Zeneca, Sputnik V) and recombinant protein vaccines (eg.Novovax) have been approved for immediate use, but determining the long-term effectiveness of vaccination with existing vaccines and moving towards adolescent and pediatric applications, as well as the reports on some serious side effects seen especially with mRNA and vector vaccines, remain important issues. In addition, the difficulties of poor countries' access to vaccines, and serious vaccine insecurity or rejection in almost all countries constitute major obstacles against the termination of the pandemic. The extension of the time required for the formation of herd immunity leads to the emergence of new variants. The rapid spread of these variants leading to a significant decrease in the effectiveness of the existing vaccines brings about a need for the modification of the current vaccines.
During this period, we developed a different vaccine candidate and two vaccine formulations that can be easily adapted to emerging variants. In our study, a fragment protein (P1; MW: 33 kDa) containing the Receptor-Binding Domain (RBD) in the spike S1 region, a fragment protein in the S2 region (P2; MW: 17.6) and nucleocapsid protein (N; MW: 46 kDa) were expressed in Escherichia coli, and subsequently the recombinant proteins were purified. It was determined that each of these three protein antigens reacted strongly with recovered Covid-19 patient sera. The combination of these three proteins was adsorbed with one adjuvant or two adjuvants led to the development of two formulations. In mouse immunization studies, these vaccine candidates elicited very high titers of anti-P1 IgG and IgG2a, anti-P2 IgG and IgG2a, and anti-N IgG and IgG2a. In the live virus neutralization assays, high virus neutralizing antibody levels were observed, and by obtaining specific interferon-gamma (INF-gamma) from immunized mouse splenocytes, we proved that a good cellular immunity was achieved too. These findings, overall, validated high immunogenicity of the P1 and P2 proteins of the S region and the N protein to order to develop an effective vaccine candidate against SARS CoV-2 infection. In addition, a variant recombinant protein was designed by our group and prepared in the same way. This protein that contains the most important point mutations of the known variants is being intended to be incorporated into our candidate vaccine. Our studies are being conducted in this direction and we aim at starting Phase I trials as soon as possible.
In conclusion, such alterations/adaptations in vaccine formulations are highly important to optimize current vaccines. In order to reduce the worldwide effects of SARS-CoV-2 variants, it is necessary to develop new generation COVID-19 vaccines besides an urgent elimination of the vaccine inequality all over the world.

**IS-013**
**Epithelial Barrier Hypothesis: Novel Aspects**

Cezmi Akdis
University of Zurich, Swiss Institute of Allergy and Asthma Research (SIAF), Davos, Switzerland

Humans are exposed to a variety of toxins and chemicals every day. According to the epithelial barrier hypothesis, exposure to many of these substances damages the epithelium, the thin layer of cells that covers the surface of our skin, lungs and intestine. Defective epithelial barriers have been linked to a rise in almost two billion allergic, autoimmune, neurodegenerative and psychiatric diseases. There has been a steep rise in allergic and autoimmune diseases, reaching epidemic proportions and now affecting more than one billion people worldwide. These diseases are more common in industrialized countries and their prevalence continues to rise in developing countries in parallel to urbanization and industrialization. Intact skin and mucosal barriers are crucial for the maintenance of tissue homeostasis as they protect host tissues from infections, environmental toxins, pollutants and allergens. A defective epithelial barrier has been demonstrated in allergic and autoimmune conditions such as asthma, atopic dermatitis, allergic rhinitis, chronic rhinosinusitis, eosinophilic esophagitis, celiac disease, and inflammatory bowel disease. In addition, leakiness of the gut epithelium is also implicated in systemic autoimmune and metabolic conditions such as diabetes, obesity, multiple sclerosis, rheumatoid arthritis, systemic lupus erythematosus, ankylosing spondylitis, and autoimmune hepatitis. Finally, distant inflammatory responses due to a 'leaky gut' and microbiome changes are suspected in Alzheimer's disease, Parkinson's disease, chronic depression and autism spectrum disorders. The immune response to opportunistic pathogens and commensals that cross the damaged barrier causes microbial dysbiosis and is involved in the development of these diseases. Nature Reviews Immunology. 2021. DOI: 10.1038/s41577-021-00538-7. Here the "epithelial barrier hypothesis" is introduced, which proposes that the rise in epithelial barrier damaging agents linked to industrialization, urbanization and modern life underlies the rise in allergic, autoimmune and other chronic conditions. After breaking of the epithelial barriers by various environmental agents and infections, microbiome which normally floats above the skin and mucosas goes deeper between and beneath the epithelial barrier. Microbial dysbiosis and decreased biodiversity develop following the colonization of commensals, such as *S. aureus, Moraxella, Haemophilus and Pneumococcus*. An immune response develops against colonizing opportunistic pathogens together with commensals. An inflammation like an expulsion response against dysbiotic microbiome, which is deeper than its usual position takes place inside and around the epithelium. Defective epithelial barrier healing capacity due to microbial dysbiosis, chronic tissue inflammation and epigenetic mechanisms lead to the chronicity of the disease.

**IS-014**
**Mechanisms that Trigger or Break Allergen-Specific Tolerance**

Mubeccel Akdis
SIAF, Davos, Switzerland

Allergen-specific immunotherapy (AIT) is the only curative treatment inducing clinical and immunologic tolerance to causative allergens in allergic patients. Investigation of B-cell responses among patients receiving venom immunotherapy and naturally exposed beekeepers suggested a similar functional immunoregulatory role for B cells, enhanced IL-10–secreting regulatory B (BR1) cells, and IgG4-secreting phospholipase A2–specific B cells in allergen tolerance. AIT also induces IL-10–producing regulatory B (Breg) cells and allergen-specific IgG4.
House dust mite (HDM) is a common cause of perennial allergy. Dust mites can survive throughout the year in warm and humid indoor conditions. Der p 1 is the major HDM allergen inducing IgG and specific IgE antibody synthesis. Multicolor flow cytometry was used to determine and follow-up the immunoglobulin isotype expressed by Der p 1–specific B cells during 2 years of HDM AIT. It was possible to identify AIT responders and non-responders after 2 years and demonstrated that especially IgA+ and IgG4+ Der p 1–specific B cells, as well as plasmablasts, expanded in patients who responded to therapy. In parallel, CD73-CD25+CD71+ expressing Breg cells, which also produce IL-10 and IL-1RA, increased in vivo during AIT. Numbers of allergen-specific IgG4+ B cells, plasmablasts, and IL-10+ and/or IL-1RA+ Breg cells positively correlated with improved clinical response during AIT.

**IS-015**
**Recombinant DNA Technology and Development of Biopharmaceutical Medicines**

Sadettin Ozturk
ArtiaBio Inc., USA

Advances in recombinant DNA technology made it possible to produce complex molecules which are used as biopharmaceutical medicines for the treatment of cancer, autoimmune diseases, and genetic diseases. Biopharmaceutical medicines are complicated proteins that can only be made using genetically engineered cells and very special manufacturing processes operated under tightly regulated environment (GMP). In this talk we will outline how the biopharmaceutical medicines are developed, how the manufacturing processes are established, and how the products are brought into market.

**IS-016**
**Errors Authors Make When Writing Scientific Papers**

Thomas Annesley
University of Michigan, Ann Arbor, USA

Researchers are rightfully concerned about the rigor of the data and results of their studies. But, when drafting a manuscript for submission for publication, it is often not the science that hurts authors' chances of acceptance but the way in which the information is presented in the manuscript. There are several areas where authors stumble when drafting a manuscript, including uninformative introductions, poorly designed figures and tables, and discussions that fail to convince the editor, peer reviewer and reader of the value of the work. This session will cover ways to grab the readers attention in the introduction, how to improve the clarity of figures and tables, how to show in the discussion that the work has value, and how to respond to reviewer and editor comments.

**IS-017**
**Raising Future Scientists and Artists: The Opportunities and Innovations of Kizilculu Science and Art Center and The Internationalization of Gifted Students with BUCA IMSEF**

Cansu Ilke Kuru, Meltem Gonulol Celikoglu, Belit Karaca, Umit Karademir
Buca Municipality Kizilcullu Science and Art Center, Izmir, Turkey

BACKGROUND AND AIM: Special education programs are implemented all over the world in order to discover the talents of gifted students and to ensure their development. The education these children receive must keep up with the changing educational technologies in the world. Science and art centers in Turkey are special education centers for gifted students.
METHODS: Within the scope of this study, the role of science and art centers in the education of gifted students is investigated and a new education system is proposed for gifted students who need special education from kindergarten to university in Kizilcullu Science and Art Center. Kizilcullu Science and Art Center aims to teach science at a young age, to discover and reveal the talents of children who are prone to different branches of art, and thus to raise them as "Scientists and Artists of the Future". In addition, the national and international music and science fair Buca IMSEF (International Music Science Energy Engineering Fair), organized by Kizilcullu Science and Art Center (KSAC) and where students showcase their projects and talents in the field of science and music, is also mentioned within the scope of the study. BUCA IMSEF is organized to spread the spirit of scientific research and art all over the world, to enable young people of the same age to engage in social and cultural exchanges, to bring together young people from all over the world who are interested in science, art and technology and are open to change and development.
RESULTS: In this center, students carry out interdisciplinary research and activities in the fields of science and art, and have the opportunity to find a place for themselves in national and international platforms. With the implementation of this system, the problems encountered in the education of gifted students are solved to a large extent and these students benefit more from the active learning and high-level education process.
CONCLUSIONS: In this new system implemented in Kizilcullu Science and Art Center, gifted students are discovered in the society and they are provided to develop their special talents.
Keywords: Gifted Students, Gifted Education, Science and Art Centers

**IS-018**
**Evaluation of Awareness of Ionizing Radiation in High School Students**

Merve Girgin
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BACKGROUND AND AIM: The lack of sufficient information about ionizing radiation, which is a type of high-energy radiation and has a very common use in both medical and industrial fields, increases the prejudices in this field. Knowing ionizing radiation, which is of great importance in the diagnosis and treatment of cancer, especially by young people, will contribute to the development of researcher infrastructure on this radiation and cancer, which will lead them to this field. The aim of this research is to determine the level of knowledge and perspective on radiation in high school students.
METHODS: As part of public awareness activities, information seminars on "Ionizing Radiation" were held with the participation of 576 students in 7 high schools in Istanbul, and 530 students participated in the evaluation. A mixed survey method was used for the evaluation.
RESULTS: As a result of the evaluations, it was determined that 74% of the students couldn't define radiation, 93% didn't know that ionizing radiation was different from non-ionizing radiation, and more than 50% were prejudiced against radiation.
CONCLUSIONS: It is very important to increase the practices and activities in which high school students -who are potential researchers of the future-, can increase their knowledge and gain awareness about ionizing radiation.
Keywords: radiation, ionizing radiation, cancer

**IS-019**
**FORUM: Agenda in Training and Education of Med. Spec., MSc and Ph.D.'s: Problems, Solutions, and Sharing Of Experiences**

Umut Akyol
Hacettepe University, Ankara, Turkey

Turkish Medical Association, Coordination Committee of Specialist Societies (TMA-CCSS) is the leading non-governmental organisation working on the education and practice of medical specialists in Turkey with 30 years of experience and know-how. It is also a member of UEMS, representing Turkey in Europe to provide and guarantee the highest standards in medical specialities' education and practice for the sake of society and defending the specialist doctors, by means of its member medical specialist societies. TMA-SSCC is and will be doing its best to lead Biochemistry discipline working in close collaboration with all stake-holders in the area of board certification and accreditation in Biochemistry in Turkey.

**IS-020**
**Implementation of an Active Learning Strategy in Postgraduate Education: Molecular Biology Techniques**

Sevcan Atay
Ege University, Faculty of Medicine, Izmir, Turkey

The ability of young researchers to acquire sufficient knowledge and experience about research and laboratory techniques in their graduate education is one of the main factors affecting success in their academic life. Molecular biology techniques are frequently preferred especially in research in the field of health sciences. Although the transfer of these techniques to students theoretically creates a general idea about the techniques, this teaching method is quite inadequate in practice. The practical demonstration of these techniques, which are financially very burdensome, is often not possible due to financial reasons. In this talk, I will share my 3-year experience and active learning teaching and learning techniques which I implemented in my molecular biology techniques course in postgraduate education.

**IS-021**
**"Flipped Learning" Approach in Medical Biochemistry Laboratory: Medical Students' Achievement and Attitudes**

Rabia Semsi
Department of Biochemistry, Faculty of Medicine, Gazi University, Ankara, Turkey

BACKGROUND AND AIM: The development of technology has wide effects on the field of education as like other fields. It has been accepted that flipped learning is an approach that draws attention in the field of education for recent years. In this model, there is not a unique strategy for both educator and student. For this reason, flipped learning can be adapted to teaching styles, conditions and methods. The aim of this study was to examine the impact of flipped classroom model on medical students' medical biochemistry laboratory achievement and attitudes.
METHODS: Regarding the Medical Biochemistry Laboratory course, the application instructions were sent to the students 7-10 days in advance, both on social media and via e-mail. In this study, a mixed design is applied in which quantitative data is supported by qualitative data. The students were given pre-test before the experimental application, the application was realized and the post-test was made and then the students' opinions were asked about the method. Also, a questionnaire consisted of 23 items was developed by the researchers for purpose of use as a data collection tool in the study. The participants consisted of 114 medical students. Descriptive analysis technique was preferred in the analysis of interviews and classroom observations. Statistical package program

was used to analyze the quantitative data.
RESULTS: Study results showed that students had very positive views about the 'flipped classroom' method. Students stated that 'flipped classroom' method increases the retention of learning, facilitates the learning, is entertaining and flexible. In the questionnaire conducted at the end of the research, 85% of medical students stated that they asked more questions to their instructors with the flipped classroom application and their communication with their instructors and friends increased thank to this model. 87.8%, agreed that such lectures should be conducted more in the future. A significant difference was found between pre- and post test scores ($p<0.001$).
CONCLUSIONS: In recent years, flipped classroom model has been expanded in a wide variety of educational settings, including medical education. With regard to the findings of the study, it can be said that flipped classroom approach can be used effectively in medical biochemistry laboratory courses. In addition, it has been found that the flipped classroom has a positive effect on students' self-regulation skills. Also, it is thought that the findings will shed light on new studies based on the flipped class model.
Keywords: Flipped learning, learning interest, innovative teaching methods, medical biochemistry laboratory, undergraduate teaching

**IS-022**
**The Importance of Amino Acid Chromatograms In Urea Cycle Defects and Their Contribution to Diagnosis**

Tijen Tanyalcin
Tanyalcin Medical Laboratory Selective Screening and Metabolism Unit, Izmir, Turkey

The determination of the amino acid composition of biological fuids are performed in our laboratory with an aminoacid analyser. Analyzer is a cation exchange chromatography system coupled with a specific detection system using post column derivatization with ninhydrin reagent. Amino acids are separated according to their net charge determined by the pKa of their ionized groups. The mobile phase is a finely tuned set of buffers used in a stepwise elution profile of increasing pH and molarity. A temperature gradient on the column maximizes resolution. Aminocid profiles and their accurate interpretation is of great importance in the differential diagnosis of inherited metabolic diseases.
Urea cycle disorders (UCDs) are inborn errors of ammonia detoxification/ arginine synthesis due to defects affecting the enzymes of the Krebs-Henseleit cycle with 5 core enzymes, 1 activating enzyme and 1 mitochondrial ornithine/ citrulline antiporter. Amino acids that should be carefully examined in plasma amino acid chromatograms are here below:
1. Citrulline (Cit =Nδ-Carbamoylornithine ; 2-amino -5-ureidovaleric acid)
2. Arginine (Arg= 2- amino -5 -guanidinovaleric acid)
3. Argininosucsinic acid (ASA) is strongly hygroscopic and only stable in its anhydrous form. In aqueous solutions, depending on pH and temperature, two ninhydrine–positive anhydrides are formed: Anhydride I is neutral aminoacid with a pI of 5.7 ve Anhydride II – is more acidic with a pI 4.2.
4. Glutamine (Gln=2-amino-4-carbamidobuytric acid)
5. L-Alanine (Ala=2-aminopropionic acid)
6. Lysine (Lys=2,6 -Diaminohexanoic acid)
7. L-Saccharopine (Sac=Nε-(Glutaryl-2) Lysine
8. L-Ornithine (Orn= 5-Aminonorvaline)
9. L-Homocitrulline (Hci= Nε-Carbamoyllysine =2 amino -6 ureido hexanoic acid ))
10. L Methiyonine (Met =2 Amino -4 methylthiobuytric acid)
Hci co-elutes with Methionine, it should be separated with a special program method. An increased urinary Hci excretion is observed in hyperornithinemia, dependent on lysine and protein intake. Hci has been found elevated in some patients with partial deficiency of argininosuccinate synthethase and also in some patients with hyperargininemia.

**IS-023**
**Inborn errors of bile acid synthesis (IEBAS) and Laboratory**

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Inborn errors of bile acid synthesis (IEBAS) constitute a group of autosomal recessive diseases that cause the accumulation of unusual intermediate bile acid metabolites as a result of structural or functional defects of the enzymes involved in the biosynthetic pathways of bile acids. If untreated, patients progress to fatal liver disease with progressive neurological symptoms, thus early diagnosis is important. Methods and the determination of biomarkers that can be used in the early diagnosis of those difficult to diagnose but can be treatable disorders are gaining attention. The primary bile acids are synthesized from cholesterol with a complex series of reactions involving 17 different enzymes found in endoplasmic reticulum, mitochondria, cytoplasm and peroxisomes. Four major biosynthetic pathways of bile acids, named the Classic / Neutral pathway, the Alternative / Acidic pathway, the Yamasaki pathway and the 25-hydroxylation pathway have been identified. Targeted mass spectrometric analyses of urine and plasma are effective in detecting intermediate metabolites released as a result of enzyme deficiencies in these pathways and in predicting these disorders. This lecture will describe the determination and the interpretation of bile acid intermediate metabolites belonging to the group of classical bile acids, hydroxylated bile acids, 3β-hydroxy Δ5- bile acids and 3-oxo-Δ4- bile acids by LC-MS/MS in dry-blot urine paper, and 5α-cholestanol, 7-dehydrocholesterol metabolites together with the evaluation of cholesterol by GC-MS in plasma.
Keywords: Inborn errors of bile acid synthesis (IEBAS), Bile acid metabolism, LC-MS/MS, GC-MS

**IS-024**
**Organic Acidemias: Clinical and Laboratory Aspects**

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Organic acidemias are a group of diseases characterized by excretion of organic acids in the urine. Many organic acidemias result from the deficiency of an enzyme involved in a specific step in amino acid catabolism. The majority of classical organic acidemias are disorders of branched chain amino acid or lysine catabolism. This group includes maple syrup urine disease, propionic acidemia, methylmalonic acidemia, isovaleric acidemia, 3-methylcrotonyl-CoA unresponsive to biotin carboxylase deficiency, 3-hydroxy-3-methylglutaryl-CoA lyase deficiency, beta-ketothiolase deficiency, and glutaric acidemia type 1. While individual organic acidemias may be rare, all organic acidemias are not uncommon. More than 100 congenital metabolic diseases, most of which are organic acidemias, present in the neonatal period, with an approximate incidence of 1/1000 in the neonatal period. A newborn with organic acidemia is usually clinically well at birth and in the first few days after birth. The time between birth and the onset of clinical symptoms can vary from hours to weeks, depending on the level of enzyme deficiency. Acidosis is often accompanied by ketosis. The anion gap is increased. The lactic acid level may also increase during the acute crisis, which contributes to the aggravation of acidosis. In organic acidemia, hypoglycemia, hypocalcemia and hyperammonemia are the findings that may accompany. The diagnosis is usually made by detecting an abnormal pattern of organic acids in a urine sample by gas chromatography-mass spectrometry. Serum amino acid analysis, carnitine and acyl carnitine analysis with and tandem mass spectrometry (tandem MS) technique show different abnormalities in different organic acidemias. Diagnosis is confirmed by enzymatic analysis and molecular genetic analysis. Ideally, quantitative amino acid analysis, tandem MS, and urine organic acid analysis results should be available within 24-48 hours. With tandem MS, early diagnosis of organic acidemia can be achieved with extended screening programs.

**IS-025**
**Clinical Tests Used in The Diagnosis and Follow-Up of Neuroimmunological Diseases**

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Immune origin neurological diseases (Multiple Sclerosis, Myasthenia Gravis, Chronic Inflammatory Demyelinating Neuropathy, Guillain-Barre syndrome, Neuro-Behcet Syndrome, vasculitides, inflammatory myopathies, paraneoplastic syndromes...) are a very common group of disorders. Early diagnosis of these diseases is very important.
The main clinical tests used in the diagnosis and follow-up of neuroimmunological diseases are;
The Oligoclonal Band Test is a laboratory test used to diagnose Multiple Sclerosis (MS). It is of great importance especially in the diagnosis of patients who are in doubt due to their clinical symptoms.
Neuromyelitis optica (NMO) IgG is used in the diagnosis of an idiopathic inflammatory demyelinating disease affecting the optic nerves and spinal cord. Its symptoms are similar to multiple sclerosis and progress with exacerbations.
Anti-MOG IgG / MOG (Myelin Oligodendrocyte Glycoprotein) test is an important test in the prognosis follow-up of Multiple Sclerosis.
The Paraneoplastic Syndrome Panel is a test used to define the effects of various organs and systems in relation to the presence of tumor in many cancer patients.
Anti-NMDAR and Autoimmune Encephalitis Panel are tests used in the diagnosis of limbic encephalitis and in the follow-up of treatment.
Ganglioside Panel is used in the differential diagnosis of neurological diseases related to gangliosides, an acid glycolipid group containing oligosaccharide and sialic acid.
Acetyl Choline Receptor Antibody is a test used to diagnose Myasthenia gravis (MG), an antibody-mediated autoimmune disease that results in loss of acetylcholine receptors (AChR) at the neuromuscular junction.

**IS-026**
**The Role of Metabolomics for the Investigation of Inborn Errors of Metabolism**

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The traditional approach for identification of inborn errors of metabolism (IEMs) involves hypothesis-driven phenotyping and/or newborn screening followed by targeted biochemical assays to determine the metabolic phenotype. In contrast, untargeted metabolomics aims to identify a maximum number of metabolites in a single sample with the aim of generating a global biochemical fingerprint. It has been hypothesized that untargeted metabolomics is more sensitive than traditional targeted biochemical assays for IEMs, and may even replace these assays in the near future as a first-line screen for IEM. This approach also has potential for biomarker discovery and functional characterization of variants of uncertain clinical significance (VUS) identified through whole exome and genome sequencing. Since untargeted metabolomics assays have begun to transition into the clinical laboratory, we discuss their analytical performance and clinical utility in comparison to established traditional targeted methods for the study of IEMs.

**IS-027**
**Laboratory Services in Turkey**

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The "Law No. 992 on Public Bacteriology and Chemistry Laboratories1, Law No. 1219 on the branches and application of the art of medicine2 and Medical Laboratory Regulation3" governs the procedures and principles concerning theplanning, licensing, opening, regulation, classification, monitoring, supervision and termination of the activities of medical laboratories owned by universities, public institutions/ organizations, private-law legal entities and natural persons in our country and ensures that they provide high-quality and efficient services.
It is one of the main objectives of our Ministry to give the right test result to the right patient at the right time, right cost and to increase the clinical usefulness of the test results. In this context, the "rational laboratory practices" project has been initiated. Our Ministry has started work on the standardization and harmonization of test units in order to facilitate the clinical decision process, protect patient safety, and increase quality and efficiency by standardizing the test measurement units for the same test studied in different medical laboratories. In order to eliminate the inconsistencies in test measurement units in all medical laboratories and to ensure national/international practice unity, an arrangement has been made for the application of test measurement units. Arrangements have been made for the establishment of a "rational test request warning system" in order to reduce the unnecessary test request that can be made by the clinician within the specified periods in medical laboratories. In certain diseases, the "decision limit" guideline and the "critical values" guide which includes the result values that require the patient's physician to be informed as soon as possible and advanced diagnostic, therapeutic and/or preventive medical intervention in cases that may pose a risk to the patient have been prepared and approved4.
The main goal of the Ministry of Health is to carry out pre-analytical, analytical and post-analytical processes in all medical laboratories in our country on the basis of international standards.
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# ORAL PRESENTATION ABSTRACTS

**S-001**
**SERUM ETHANOL LEVEL MEASUREMENT UNCERTAINTY at ANKARA GULHANE TRAINING AND RESEARCH HOSPITAL EMERGENCY BIOCHEMISTRY LABORATORY**

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BACKGROUND AND AIM: Serum ethanol level measurements are frequently performed in clinical and forensic toxicological laboratories. Measurement uncertainty is defined as analytical data that evaluates the reliability of a test. The aim of this study is to evaluate the measurement uncertainty of the ethanol test by using the internal and external quality control results of Gulhane Training and Research Hospital Emergency Biochemistry Laboratory. METHODS: The measurement uncertainty of serum ethanol analysis was calculated according to the Nordest Guidelines. For this purpose, ethanol internal quality control (120 units) and external quality control (6 units) results of Beckman Coulter AU680 autoanalyzer in Ankara Gulhane Training and Research Hospital Emergency Biochemistry Laboratory were retrospectively scanned and used in the calculation. RESULTS: In the analyzes made using the data of our laboratory, the uncertainty value of the ethanol test was determined as 11.92%. CONCLUSIONS: Uncertainty is a parameter that shows the distribution of probabilities attributed to the measurement result. The ethanol analysis results of our laboratory were determined as ±11.92% U (extended uncertainty). While ignoring the uncertainty increases the risk of making the wrong decision, its interpretation with the result reduces the risk of the decision maker. Therefore, calculating the uncertainty values in the measurement of serum ethanol level is one of the important steps to be taken in order to increase the reliability of the results.
**Keywords:** Analytical performance, Ethanol, Measurement uncertainty

**S-002**
**A COMPARISON OF MEASUREMENT UNCERTAINTIES OF HBA1C ANALYTE ACCORDING TWO DIFFERENT EXTERNAL QUALITY CONTROL PROGRAMME**

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BACKGROUND AND AIM: Quality control (QC) of analytical measurement is a stage used for the evaluation of whether the measurement method is appropriate to the standards required for patient care. Measurement uncertainty (MU) is an important issue that express a measurement for each analyte. Aim of this study is to calculate the measurement uncertainties of HbA1c analyte studied in immunoturbidimetric method according two different external QC programme. METHODS: In the study, Abbott Architect C 8200 Series (Abbott, USA) was used. MU were calculated from both IQC data (Archem Diagnostics) of the analytes between January 2019 and December 2020 were used together with the two different monthly EQC programme (KBUDEK; January 2019 to December 2019 and EQAS: January 2020 to December 2020). NORDTEST guideline was used to calculate the MU. "Desirable" analytical quality goals of HbA1c with Fraser's formula were calculated and evaluated the limits from EuBIVAS and Ricos's biological variation databases. RESULTS: In 2019; CV% (Normal and Pathologic) of HbA1c were 3.65% and 5.30%, respectively; absolute value of %bias was 1.79%. MU of HbA1c was 9.02%. In 2020, CV% (Normal and Pathologic) of HbA1c were 4.93% and 2.77%, respectively; absolute value of %bias was 0.48%. MU of HbA1c was 5.56%. Total Allowable Analytical Error (TAAE) of HbA1c from EuBIVAS, Ricos databases and Westgard's allowable measurement uncertainty were 3.14%, %3.07 and 3.00% respectively. CONCLUSIONS: Relatively high Rw and Cref values of our study were realized the most important reasons for not achieving analytical quality of HbA1c in our laboratory. Corrective and preventive actions should be implemented.
**Keywords:** Analytical Quality, HbA1c, Measurement Uncertainty

**S-003**
**APPLICATION OF D-DIMER IMPROGEN KIT TO ROCHE COBAS 6000 AND COMPARISON WITH STAGO COMPACTMAX®3 RESULTS**

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BACKGROUND AND AIM: Due to supply problem with D-Dimer kit of Stago Compact Max®3 device we use in our routine, we planned to use Improgen brand domestic kit in c501 module of Roche Cobas 6000 device, which is also available in our laboratory. We compared it to current Stago Compact Max®3 instrument to see its analytical performance before moving on to the routine. METHODS: 33 patient samples were simultaneously studied on Roche Cobas 6000 (Roche Diagnostics GmbH, Mannheim, Germany) and Stago Compact Max 3 (Diagnostica Stago S.A.S., France).The lowest and highest D-dimer levels we studied in the Roche Cobas 6000 device were 0.24 µg/ml and 3.65 µg/ml, respectively; values on the Stago Compact Max®3 device were 0.26 µg/ml and 3.77 µg/ml, respectively. The conformity of data to normal distribution was evaluated with Shapiro Wilk test. Spearman correlation analysis, Passing-Bablok regression analysis and Bland-Altman analysis were performed via MedCalc Software. CV% values were calculated. Precision studies were performed for the STA–Liatest D-Di PLUS kit according to the CLSI EP05-A2 manual and the %CV value for D-dimer is given as 6.6 in the insert information. RESULTS: For D-dimer test; in correlation analysis rho=0.891 (p< 0.0001), in Passing Bablok regression analysis, it was found as y= -0.01000000 + 1.000000 x (95% confidence intervals slope 0.8585 – 1.1045, intercept -0.08597– 0.06962). % bias was found to be 2.793 for d-dimer test. (Desirable % bias value: 8.82) In two different plasma samples with D-dimer result of 0.438 µg/ml (FEU) and 1.41 µg/ml (FEU), CV% values were calculated as 7.32 and 2.81 (accepted CV% value of 11.65), respectively. CONCLUSIONS: In the Passing Bablok regression analysis, intercept and slope values were within 95% confidence interval. 95% of the data in Bland-Altman plot are within ± 1.96 SD. As a result of the comparison study conducted with Improgen brand D-dimer test applied to Roche Cobas 6000 and Stago Compact Max®3 device, it was shown that the data were statistically compatible.
**Keywords:** Analytical performance, D-dimer, device comparison, quality goal index

**S-004**
**COMPARISON OF TRIPTOPHAN-KINURENINE PATHWAY METABOLITES IN SERUM AND PLASMA MATRIXES WITH LC-MS/MS METHOD**

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BACKGROUND AND AIM: The kynurenine pathway (KP) is the major metabolic pathway of the essential amino acid tryptophan. Stimulation by inflammatory molecules, such as interferon-γ, is the trigger for induction of the KP. Kynurenine is catabolized to bioactive metabolites such as kynurenic acid, 3-hydroxyquinurenine and 3-hydroxyanthranilic acid via KP. This pathway is associated with neurodegeneration, cancer, infectious and autoimmune diseases. Our aim in this study is to compare serum and plasma tryptophan and KP metabolites concentrations in order to determine the matrix effect. METHODS: 100 µl of internal standard (donepezil) and 1000 µl of acetonitrile (containing 1% formic acid) were added to 300 µl of sample and vortexed for 30 seconds, centrifuged at 12000 rpm for 10 minutes. Then, 1000 µl of the supernatant was transferred to clean glass tubes and evaporated under nitrogen gas. The residues in the tubes were dissolved in acetonitrile:water (25:75) mixture containing 200 µl of 0.1% formic acid. 40 µl was injected into the system. RESULTS: Plasma levels were approximately two-fold the serum levels. The median (min-max) plasma values for tryptophan, kynurenine, kynurenic acid, 3-OH kynurenine and 3-OH anthranilic acid were as follows: 9680(3440-25000); 150.5(4.91-2340); 3.01(0.10-46.8); 1.83(0.19-18.2); 1,202(0.06-77.6) respectively and serum values were 4960(552-71800); 98.5(19.25-3375); 2.98(0.8-45.8); 1.56(0.17-8.08); 1.246(0.13-6.46), respectively. Imprecision values were less than 5% and 9% for plasma and serum, respectively. CONCLUSIONS: Plasma was found to be the superior sample matrix in terms of sample reproducibility. Therefore, plasma samples should be used for the measurement of KP metabolite levels.
**Keywords:** Tryptophan, kynurenine pathway, autoimmunity

**S-005**
**DETERMINATION OF MEASUREMENT UNCERTAINTY OF 25-OH VITAMIN D, VITAMIN B12 AND FOLATE TESTS**

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BACKGROUND AND AIM: Laboratory results are critical to produce reliable results for clinical decision point. Measurement uncertainty that characterizes the distribution of all values reasonably attributable to the measurand and is defined as a parameter associated with the result. In the present study we aimed to calculate the measurement uncertainty for folate, Vitamin B12 and 25-OH Vitamin D tests which help the clinician in the diagnosis. METHODS: Measurement uncertainty was determined for folate, vitamin B12 and 25-OH vitamin D parameters measured with the Roche Cobas 6000 (Roche Diagnostics, 68305 Mannheim, Germany) analyser. Two levels of internal quality

control results between January and June 2021 and the six-month external quality control results (EQAS) were used. Nordtest guideline was used to determine the measurement uncertainty by tracking six steps. The calculated measurement uncertainty values were compared with the % total allowable error (TEa%) values determined by The Royal College of Pathologists of Australasia (RCPA). RESULTS: The expanded uncertainty for folate, Vitamin B12 and 25-OH Vitamin D were calculated as 14.7%, 8.4% and 14.1% at 95% confidence interval and they were not found to be higher than TEa of the guideline (TEa=25% for folate, TEa=30% for Vitamin B12 and TEa=15% for 25-OH Vitamin D according to RCPA). CONCLUSIONS: The measurement uncertainty values calculated for folate, Vitamin B12 and 25-OH Vitamin D tests in our laboratory are below the targeted TEa. Reporting patient test results with calculated measurement uncertainty in laboratories could make a significant contribution to increase the reliability of the results.
**Keywords:** Measurement Uncertainty, folate, Vitamin B12 and 25-OH Vitamin D

**S-006**
**COMPARISON OF DIRECT ENZYMATIC LDL CHOLESTEROL MEASUREMENT WITH FRIEDEWALD AND SAMPSON EQUATION**

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BACKGROUND AND AIM: Although β-quantitative measurement is the gold standard method for low-density lipoprotein (LDL-C) measurement, enzymatic measurement and formula-based calculations are more widely used because it is more expensive, requires long time and intensive labor. In this study, it was aimed to compare LDL-C levels measured by direct enzymatic method with LDL-C levels obtained by Friedewald and Sampson formulas. METHODS: 99 patients who applied to our hospital between 14.02.2021 and 09.03.2021 and whose triglyceride level was below 400 mg/dl were included in the study. Triglyceride, high-density lipoprotein, total cholesterol and LDL-C from the serum samples of the patients were analyzed with Roche kits on Roche Cobas 6000 and 8000 (Roche Diagnostics, Manheim, Germany) analyzers. Also, LDL-C levels were calculated using the Sampson and Friedewald formula. The statistically significant difference between calculated and measured LDL-C levels was tested, correlation and regression were checked. RESULTS: LDL-C measured, LDL-C Friedewald and LDL-C Sampson mean±SD values were calculated 131±47; 104±39 and 107±40, respectively. While there was a statistically significant difference between LDL-C measured and LDL-C levels calculated with both formulas ($p<0.05$), no difference was observed between calculated LDL-C levels. Correlation and regression formula for LDL-C Friedewald and LDL-C measured was rcor=0.964, y=1.1574x + 10.856 (r2=0.930); for LDL-C Friedewald and LDL-C Sampson was rcor=0.998, y=1.0101x + 1.5729 (r2=0.997) and for LDL-C Sampson and LDL-C measured was rcor=0.966, y=1.1458x + 9.0579 (r2=0.933). CONCLUSIONS: Studies have shown that LDL-C levels calculated with Friedewald and Sampson formulas can be used instead of β-quantitative measurement, which is the gold standard method. It is thought that the use of LDL-C calculated with Friedewald in our laboratory will be more appropriate and cost-effective.
**Keywords:** LDL Cholesterol, Friedewald equation, Sampson equation

**S-007**
**EVALUATION of GLUCOMETERS TO BE USED IN THE NEONATAL CLINIC**

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BACKGROUND AND AIM: Glucometers are in vitro diagnostic medical devices mostly used by individuals affected by diabetes mellitus. With these devices, it allows to monitor and control the blood glucose concentrations of the patients. We aimed to present the results of two different brands of glucometers comparison with a blood gas analyzer for use in neonatal clinic. METHODS: Glucose measurements were performed using two lots of Glucoleader Enhancer and Yasee glucometers from samples sent from neonatal clinic for blood gas analyzer on the ABL800. The results were compared with Bland-Altman charts and evaluated according ISO 15197:2013 criteria, as ABL800 reference method. MedCalc® Statistical Software was used for statistical analysis. RESULTS: The mean glucose concentrations for ABL800, Glucoleader and Yasee of 38 samples included in study were 93.9±28.5(min-max:55-172)mg/dL, 79.7±24.2(min-max:41-138)mg/dL ve 87.1±31.5(min-max:48-159)mg/dL, respectively. According to Bland-Altman analysis, in 28 samples with glucose concentration <100mg/dL, mean difference for Glucoleader was 12mg/dL and regression equation was "y=4.3073+0.09629x", while mean difference for Yasee was 8mg/dL and regression equation was "y=-22.8731+0.3869x". According to ISO 15197:2013, it was determined that 10/28 samples for Glucoleader were outside the allowable ±15mg/dL difference. For Yasee, ratio was 6/28. According to Bland-Altman analysis, in 10 samples with glucose concentration >100mg/dL, mean difference for Glucoleader was 14.9% and regression equation was "y=-0.3229+0.1144x", while mean difference for Yasee was 2.1% and regression equation was "y=-6.0465+0.06122x". According to ISO 15197:2013, it was determined that 8/10 samples for Glucoleader were outside allowable 15% difference. For Yasee, this ratio was 3/10. CONCLUSIONS: Results show that performances of existing lots aren't at desired level. Despite ease of use, glucometers need to be evaluated for performance at each lot change. Our study has shown that evaluation of glucometers can be done objectively by method comparison.
**Keywords:** Glucometer, Comparison, Newborn

**S-008**
**ANALYTICAL AND CLINICAL PERFORMANCE EVALUATION OF NEONATAL FLUOROMETRIC BIOTINIDASE KIT**

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BACKGROUND AND AIM: Trimaris Neonatal Fluorometric Biotinidase Kit is a fluorometric enzymatic assay kit developed for neonatal biotinidase deficiency screening, through semi-quantitative of biotinidase on dried blood spots. In this study, the aimis to carry out analytical and clinical performance validation of the IVD (in vitro diagnostic) product Trimaris Neonatal Fluorometric Biotinidase Kit. METHODS: In this study, with adherence to the related CLSI (Clinical And Laboratory Standards Institute) guidelines, the precision (CLSI EP5-A3), analytical sensitivities (CLSI EP17-A2), interferences (CLSI EP7-A3), linearity (CLSI EP6), accuracy and clinical performance (including clinical cut-off) of the test kit is evaluated.
RESULTS: The precision of the test kit was found to be within acceptance criteria. The Limit of Quantitation was determined as 4.5 U. The linear range of measurement was found to be up to 300 U. In the accuracy study where external quality assurance samples from CDC, USA were used, the measurements for all tested samples were in accordance with target results announced by the CDC. Interfering endogenous agents and their concentrations, as well as clinical cutoff point (determined as a result of analysis of 5279 newborn DBS samples) were reported in the instructions for use of the kit. CONCLUSIONS: The findings were presented in the instructions for use, under Analytical Performance Characteristics and Clinical Performance Characteristics.
**Keywords:** accuracy, biotinidase deficiency, newborn screening, precision, validation

**S-009**
**COMPARISON OF MEASUREMENT UNCERTAINTY VALUES DETERMINED USING NORDTEST NT TR 537 AND ISO/TS 20914:2019 APPROACHES FOR 22 IMMUNOASSAY ANALYTES**

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BACKGROUND AND AIM: Measurement uncertainty (MU) is a requirement for ISO 15189 accreditation as well as a useful concept in evaluating analytical performance and interpreting patient results. There are many different approaches to estimating MU. This study aimed to compare expanded MU values determined using NORDTEST NT TR 537 and ISO/TS 20914:2019 approaches for 22 immunoassay analytes. METHODS: In NORDTEST, MU was computed from internal quality control (IQC) and external quality control (EQC) data between 01.03.2019-29.02.2020. In ISO/TS 20914:2019, IQC, EQC and calibrator uncertainty data were used. Moreover, in this approach, IQC data were evaluated separately according to reagent, control and calibrator lot number. MU was estimated separately for two IQC levels, and the higher MU was considered for comparison. The analytes were measured on three Roche Cobas 6000 e601 instruments. RESULTS: In NORDTEST, MU was <15% for NT-Pro-BNP, TSH, insulin, CEA, LH, hCG and prolactin; <20% for procalcitonin, total PSA, total IgE, FSH, ferritin, free PSA, CA 15-3, vitamin B12, troponin T and CA 125. For CA 19-9, FT3, FT4, folate and 25-OH-Vitamin D, MU was determined to be 22.4%, 25.8%, 26%, 28.1% ve 35.3%, respectively. Using the ISO/TS 20914:2019, MU was calculated as <10% for all analytes except vitamin B12, procalcitonin, folate and 25-OH Vitamin D. For these tests, MU was 10.6%, 11.9%, 17.6% and 21.2%, respectively. The difference between MU determined using the two methods was >5% for 20 analytes and >10% for 10 analytes. CONCLUSIONS: MU can be estimated using the two methods without performing additional laboratory measurements. However, MU for some immunoassay analytes may differ noticeably between the two methods. Therefore, laboratories should consider the method used in the calculation when comparing MU.
**Keywords:** Calibrator uncertainty, immunoassay, internal quality control, external quality control, measurement uncertainty

**S-010**
**CALCULATION OF MEASUREMENT UNCERTAINTY OF DIFFERENT BIOCHEMISTRY PARAMETERS IN THREE SEPARATE DEVICES**

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BACKGROUND AND AIM: The aim of this study is to calculate the measurement uncertainty values of eight biochemistry parameters separately by using internal and external quality control data in three different devices of the same brand and model, and to compare these calculated values with the % total allowable error (%TEa) values of CLIA.
METHODS: Extended uncertainty of measurement was calculated using the top-down method published in the Nordest guideline for ALT, AST, ALP, GGT, CK, Total protein, Glucose, Creatinine, Urea Tests, which were studied on 3 Beckman AU5800 brand devices in routine and emergency biochemistry units of our laboratory.
RESULTS: The expanded measurement uncertainty values calculated for each device were respectively ALP: 18.57%-20.59%-23.7%, ALT: 8.9%-8.2%-10.9%, AST: 12.95%-10.59%-16.6%, CK: 16.6%- 15.37%-14.4%, GGT: 11.48%-15.2%-8.3%, Glucose: 9.01%-9.1%-9.05%, Creatinine: 12.18%-12.68%-11.3%, Total protein: 9.03%-8.37%- 8.87%, Urea: 7.39-13.08%-12.5%. When these calculated values are compared with the % total allowable error (%TEa) values of CLIA, it has been determined that all parameters are within the limits allowed by CLIA, and there are differences at the device level.
CONCLUSIONS: : Laboratories should create the measurement uncertainty calculation model and control the analytical difference in case of having more than one device for the same tests. Laboratories should also provide results not exceeding the targeted %TEa values and should inform the clinician about this.
**Keywords:** Measurement uncertainty, Accuracy, beckman coulter

**S-011**
**NOVEL METHOD DEVELOPMENT AND VALIDATION OF HBA1C MEASUREMENT IN HUMAN PLASMA BY LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY**

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BACKGROUND AND AIM: Diabetes is a chronic metabolic disorder which is characterized by high blood glucose levels causing damage to body organs. About 422 million people suffers from and 1.6 million yearly deaths are directly related to diabetes. When the body become insulin resistant or cannot make enough insulin, high blood glucose levels induces the non-enzymatic irreversible glycation of Hemoglobin. Instead of blood glucose tests which measure free glucose at a single time point, HbA1c test measures the percentage of glycated hemoglobin and reflects the blood glucose levels from up to last three months. Therefore HbA1c test identifies the risk of diabetes more accurately. IFCC brought global standardization for the HbA1c measurement methods using protein certified reference materials (CRM) as calibrants. In this study, IFCC compatible, novel SI traceable peptide based LC-MS measurement method for HbA1c in human plasma was proposed.
METHODS: Glycated and non-glycated Hemoglobin synthetic hexapeptides were used as calibrants. Mass fractions of synthetic hexapeptides were quantitatively determined by liquid chromatography-isotope dilution mass spectrometry (HPLC-IDMS). Quality control CRM and human plasma samples were digested by Glu-C enzyme overnight and then analyzed by LC-MS. Concentration of quality controls and plasma samples were calculated using calibration curve and method validation performed.
RESULTS: Developed method has calibration curves linear across 0-160 mmol/mol range with $R^2$>0.998. Method also shows almost identical intra and inter day accuracy and precision data with IFCC reference method with 100% recovery across all quality control levels.
CONCLUSIONS: Accurate and precise measurement method for HbA1c is developed and validated.
**Keywords:** HPLC-IDMS, LC-MS, HbA1c

**S-012**
**DEVELOPMENT OF A TANDEM MASS SPECTROMETRIC METHOD FOR THE QUANTITATION OF DEXAMETHASONE LEVELS**

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BACKGROUND AND AIM: Dexamethasone is one of the most potent glucocorticoid. It is used in the various medical conditions such as multiple sclerosis, allergies, inflammation, asthma, dermatitis and shock. Recently, dexamethasone has been found to be beneficial in patients with COVID-19 pneumonia requiring supplemental oxygen or mechanical ventilation. It can cause serious adverse effects such as adrenal suppression, hyperglycemia, and cardiac arrhythmia. Therefore, monitoring of dexamethasone levels is important. Our aim in this study is to develop an LC-MS/MS method for dexamethasone.
METHODS: Dexamethasone was detected with ABSciex API 3200 tandem mass spectrometery in positive electrospray ionization mode. The selected ion transitions for dexamethasone and internal standard were m/z 289.5/97.3 and m/z 339.1/113.2, respectively. Briefly, 100 µL of internal standard (17-hydroxyprogesterone-d8) and 4 mL of diethylether were added to 250 µL of sample, and vortexed for 1 minute, then centrifuged at 4000 g for 10 minutes. The supernatant was taken into tubes and evaporated at 40 °C under nitrogen gas. The residues were dissolved in 200 µL of methanol:water (1:1, v/v%) and 25 µL was injected.
RESULTS: The calibration curve was linear between 1.95 and 2000 ng/mL (r2>0.99). The limit of quantitation for dexamethasone was 1.95 ng/mL. Total run time was 5 minutes. Intra- and inter-assay imprecision values were less than 9%. The mean extraction recovery was 92.8%, and the matrix effect ranged from 3.6% to 9.8%.
CONCLUSIONS: A sensitive and reproducible tandem mass spectrometry method was developed for dexamethasone. The method can be used in the analysis of dexamethasone.
**Keywords:** Tandem mass spectrometry, dexamethasone, COVID-19, corticosteroid

**S-013**
**DEVELOPMENT OF LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRIC METHOD FOR EMPAGLIFLOZIN**

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BACKGROUND AND AIM: Empagliflozin is an antihyperglycemic drug used in the treatment of Type-II-Diabetes. Monitoring of empagliflozin is necessary as side effects such as bloody urine, burning or painful urination. The aim of the study is to develop an LC-MS/MS method for empagliflozin.
METHODS: In order to extract empagliflozin from the biological matrix, protein precipitation followed by evaporation was tried in the pretreatment steps. Consequently method validation trials, the most appropriate method was found as follows: 250 µL of sample was taken into eppendorf tubes and 100 µL of carbamazepin (100 ng/mL) and 850 µl acetonitrile (containing 0.1% formic acid) were added. Then, the mixture was vortexed during 3 minutes and centrifuged at 14000rpm for 15 minutes. The supernatants were taken into clean glass tubes and dried under nitrogen gas at 40°C. The dried residues were dissolved in 200 µl acetonitrile:water (50:50, v/v%), containing 1mM ammonium-formate and 0.1% formic acid. 20 µL was injected to system.
RESULTS: The standard curves was linear within the range of 9-5000 ng/ml with a correlation coefficient (r2) better than 0.998. The Lower Limit of Quantification (LLOQ) was 15 ng/mL. The recovery values of the protein precipitation and evaporation processes applied in the pretreatment step were found to be 87.5% and 93.8%, respectively.
CONCLUSIONS: The most satisfactory method in terms of peak intensity and shape was evaporation. A rapid, cost-effective, simple and robust measurement method has been developed for the quantification of empagliflozin and the method can be used for the quantification of empagliflozin levels.
**Keywords:** Empagliflozin, tandem mass, therapeutic drug monitoring, adverse effect

**S-015**
**BIOMARKERS FOR THE EARLY DIAGNOSIS OF BACTEREMIA IN SEPTIC PATIENTS IN THE EMERGENCY DEPARTMENT**

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BACKGROUND AND AIM: We compared the diagnostic values of PCT, IL-6, LAC, LBP, WBC in the prediction of bacteremia in adult emergency department patients. We then investigated the performance of the composite biomarkers and compared their performance for diagnosing bacteremia in septic patients with single(non-composite) biomarkers. METHODS: First-hour blood levels of CRP, PCT, LAC, IL-6, LBP, WBC were collected from our 30-person control group and from 47 adult patients who fitted our inclusion criteria and were admitted to the emergency department on suspicion of sepsis. We categorized patients accordingly to their status of having sepsis using Sepsis-3 criteria and their status of having bacteremia. Following that categorization, our control group was called S- B -, septic patients with bacteremia were called S+ B+ septic patients without bacteremia were named as S+ B-. RESULTS: Only PCT and LAC blood levels are shown to demonstrate a statistically significant difference between the S+ B+ group and the S+B- groups ($p < 0.05$). The two predictor variables, LAC, PCT established themselves as independently associated variables with having bacteremia in state of sepsis. PCT had an odds ratio of 1.921 (CI 1.156 – 3.193 p: 0.012) LAC had an odds ratio of 2.590 (CI 1.116-6.015 p: 0.027). The areas under the ROC curve of biomarkers for discriminating positive blood culture in septic patients were PCT= 0.773 (95% CI 0.639-0.907), LAC = 0.744 (95% CI 0.603-0.886), CRP= 0.523 (95% CI 0.353- 0.694), Combined 1 (PCT + LAC) = 0.806 (CI 0.679 - 0.933), Combined 2 (PCT + LAC+ CRP) = 0.829 (CI 0.707 - 0.951) CONCLUSIONS: PCT demonstrated the highest predictive power of bacteremia followed closely by LAC. CRP failed to deliver comparable diagnostic performance. A combination of biomarkers such as Combined 1 (LAC + PCT) or Combined 2 (CRP + LAC + PCT) outmatched PCT as a single test in predicting the bacteremia in adult patients in the setting of emergency department care. The composite biomarker Combined 2 demonstrated the best predictive performance for bacteremia with sepsis. WBC: white blood cell count, LAC: lactate, LBP:lipopolysaccharide-binding protein CRP: C reactive protein, PCT: procalcitonin, IL-6: interleukin-6, ROC: receiver operating characteristic
**Keywords:** Biomarker,Bacteremia,Sepsis,Emergency Department

**S-016**
**EFFECT OF HEMOLYSIS ON RESULTS IN STA COMPACT MAX COAGULATION DEVICE WORKING WITH MECHANICAL METHOD: EXAMPLE OF HAYDARPASA NUMUNE HEALTH APPLICATION AND RESEARCH CENTER**

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BACKGROUND AND AIM: Prothrombin time (PZ), international normalized ratio (INR), and activated partial thromboplastin time (aPTZ) are coagulation tests that are frequently studied in clinical laboratories. PZ is used to measure the common pathway and extrinsic pathway of the coagulation cascade, and aPTZ is used to measure the common pathway and intrinsic pathway of the coagulation cascade. Hemolyzed samples may cause changes in optical instruments due to spectral overlaps in these measurement parameters. Hemolysis is one of the most important causes of preanalytical errors that cause interference. METHODS: Blood samples taken from 30 volunteers included in our study into sodium citrate tubes before centrifugation, except for the control sample, It was pipetted 3, 5 and 7 times with a 23G syringe and centrifuged. After the separated plasmas were classified according to the hemolysis index, PT, APTT and INR levels were measured mechanically in the STA Compact Max device. RESULTS: In the measurements we made in the plasma samples, which we classified according to the hemolysis index we determined from yellow to red, Although there were increases and decreases in PZ, INR and aPTZ levels, there was no statistical change. CONCLUSIONS: According to the results of our study, it was observed that PZ, INR and aPTZ levels were affected in the hemolyzed plasma samples, which we studied with the mechanical method, but it did not have a significant effect on the results.
**Keywords:** prothrombin time (PZ), international normalized ratio (INR), activated partial thromboplastin time (aPTZ), mechanical method, hemolysis

**S-017**
**LYMPHOCYTE SUBGROUP ANALYSIS BY FLOW CYTOMETRIC METHOD IN PATIENTS DIAGNOSED WITH COVID 19**

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BACKGROUND AND AIM: Multiparametric flow cytometry method is considered as the gold standard for the determination of lymphocyte subgroup analysis. In this study, it was aimed to perform lymphocyte subgroup analysis in patients with COVID-19 and to compare it with the healthy group. METHODS: The study included 50 patients with COVID-19 who applied to Diskapi Yildirim Beyazit Training and Research Hospital after approval of the ethics committee. All COVID-19 patients (n=50) and healthy controls (n=30) are equal in age and gender. Whole blood samples were taken into an EDTA tube and measured by a hemogram analyzer within 2 hours. Lymphocyte subgroup analyses (CD3, CD4, CD8, CD19, CD56, CD16) and activated T lymphocytes(HLADR) were performed using the flow cytometric method in the same samples. Lymphocyte counts were calculated using the dual platform. RESULTS: White blood cell and lymphocyte counts were significantly low in the patients with COVID- 19 (respectively, p=0.036). Flow cytometric analysis revealed that the CD3+ T lymphocyte counts and CD19+ B lymphocytes counts and percentage were significantly lower (p=0.008, <0.001, 0.004) in disease group compared to the controls but no difference observed in NK cells. In T lymphocytes, CD4+ T and CD8+ T lymphocyte counts were significantly lower (p=0.007, <0.05), but their percentages and CD4/CD8 ratios was not significantly different. The percentage of HLADR expression in T lymphocytes was significantly increased compared to the healthy group (p=0.001). CONCLUSIONS: T and B lymphocyte counts were low in COVID 19 patients. Activated T lymphocytes may be involved in the pathogenesis of the disease.
**Keywords:** COVID 19, lymphocyte subsets, HLA DR, CD3, flow cytometry

**S-018**
**EVALUATION OF SERUM ADIPOCYTOKINE AND IL-18 LEVELS IN PATIENTS WITH EPILEPSY RECEIVING AND NOT RECEIVING ANTIEPILEPTIC TREATMENT**

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BACKGROUND AND AIM: Epilepsy is a neurological disease characterized by recurrent seizures. The pathphysiological mechanisms underlying epilepsy disease are not fully known. Our aim in this study is to evaluate the effects of serum vaspin, visfatin, chemerin, and interleukin-18 (IL-18) levels on the physiopathology of epilepsy in epilepsy patients receiving or not receiving antiepileptic drug therapy. METHODS: Our study was determined into three groups. Group I: Epilepsy patients receiving antiepileptic therapy (n=30),Group II: Patients with epilepsy who do not receive treatment (n=30), Group III: Control group (n=30). Serum vaspin, visfatin, chemerin and IL-18 levels were measured by the enzyme-linked immunosorbent assay method. RESULTS: It was determined that serum chemerin, vaspin, visfatin and IL-18 (p<0.001), levels were increased in epilepsy patients who received and did not receive antiepileptic therapy, and that serum glucose, cholesterol total protein and albumin concentration decreased receive antiepileptic therapy compared to the control group and was statistically significant. It was found that the BMI ratio decreased in epilepsy patients receiving antiepileptic treatment compared to the control group and the group that did not receive treatment, and it was statistically significant (p<0.01). A negative correlation was observed between BMI index and serum vaspin in epilepsy patients who did not receive treatment. In our classification according to epileptic seizure types, no statistically significant difference was observed in serum vaspin, visfatin, chemerin, and IL-18 levels in partial and generalized seizure types.

CONCLUSIONS: In conclusion, in our study, it was shown that serum vaspin, visfatin, chemerin, and IL-18 levels increased and serum glucose, cholesterol, total protein, and albumin concentrations decreased in epilepsy patients who received and did not receive antiepileptic therapy. The findings of our study indicate that inflammation may play a role in the pathophysiology of epilepsy. The fact that inflammatory cytokines are high in epilepsy patients, both on and off antiepileptic treatment, and the lack of difference between them makes our study valuable. However, larger studies are needed to reveal the role of serum vaspin, visfatin, chemerin, and IL-18 biomarkers in the pathophysiology of epilepsy.
**Keywords:** Topiramate, IL-18, Vaspin, Visfatin, Chemerin, Epilepsy

**S-019**
**INVESTIGATION OF IL-1 BETA LEVELS IN THE FOLLOW-UP OF COVID-19 POSITIVE PATIENTS**

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BACKGROUND AND AIM: COVID-19, caused by a new coronavirus, SARS-CoV2, which emerged in the animal market in Wuhan, China in December 2019, causes severe acute respiratory syndrome. The coronavirus is structurally 2 single-chain, positive polarity, enveloped, ribonucleic acid viruses. It targets the respiratory system. In clinical studies, it has been found to cause a cytokine storm that leads to multi-organ failure. Cytokines are small molecular weight, soluble proteins released by immune cells. The most important is Interleukin-1 β (IL-1β). In this study, it was aimed to determine the levels of IL-1β, which is secreted from innate immune system cells such as monocytes, macrophages and dendritic cells, in patients with COVID-19. METHODS: COVID-19 positive patients (n=52) and healthy individuals without any systemic disease (n=35) were included in the study. IL-1β levels from serum samples of patient and control groups were studied by ELISA method in DSXTM Four-Plate Automated ELISA Processing System microELISA device. Statistical analyzes were performed with SPSS Statistic (IBM Corporation, Somers, NY) software version 17. Data were given as median [25P-75P] with the Mann-Whitney U Test. RESULTS: IL-1β levels were 892.09 mg/dL in the patient group; [821.88-1189.01], while 828.55 mg/dL in the control group; [720,70-1387,55]. Although IL-1β levels increased in the patient group compared to the control group, there was no statistically significant difference (p>0.211). CONCLUSIONS: CONCLUSION: By using the data of the study, further studies are recommended to show the effects of IL-1 BETA level on COVID-19 positive patients.
**Keywords:** COVID-19, IL-1 BETA, Elisa, Cytokines

**S-020**
**INVESTIGATION OF ADROPIN AND INFLAMMATION MARKERS IN MALE SUBJECTS WITH SEVERE OBSTRUCTIVE SLEEP APNEA SYNDROME WITHOUT DIABETES**

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BACKGROUND AND AIM: Adropin is a peptide hormone that is highly effective in regulating carbohydrate and lipid metabolism. We aimed to investigate adropin and the other inflammation markers as metabolic syndrome, insulin resistance, inflammation marker in patients with obstructive sleep apnea syndrome (OSAS). METHODS: Non-diabetic male cases (N=80) who underwent polysomnography in the sleep laboratory at Istanbul Training and Research Hospital between July 2019 and August 2020 were included in the study. 48 cases with severe disease (Apnea-Hypopnea-Index >30) and 32 cases in the control group (Apnea-Hypopnea Index <5) participated in the study. Adropin levels were performed via ELISA. The relationship between all laboratory, clinical findings, age and anthropometric measurements was examined. Student-t or Mann-Whitney U tests were used to compare two independent groups. Relationships between variables were performed with Spearman or Pearson correlation analyzes; binary logistic regression analysis was performed to determine the possible independent risk factor (SPSS v.22 and MedCalc v.15.8 programs). RESULTS: Adropin and hemoglobin levels were found lower in the severe disease than the controls; C-reactive protein (CRP), fibrinogen/albumin ratio, white blood cells, neutrophils, mpv, monocytes, insulin, glucose, HbA1c were higher in the severe group (p<0.05). Adropine levels were significantly associated with REM-AHI, oxygen saturation mean, minimum, <90%. According to the multivariate regression analysis, CRP was an independent risk factor in the diagnosis of OSAS [OR= 2.892 (95% CI: 1.06-7.88), p<0.05]. HOMA-IR values were positively correlated with both REM-AHI and NREM-AHI. CONCLUSIONS: Serum CRP levels over 4,17 mg/dL will be helpful in identifying and prioritizing patients at high risk for OSAS. Although the relationship between insulin resistance and REM stage was shown in the literature, in our study it was found to be associated with both sleep stages; we think that it will be useful to reveal the effects of energy and carbohydrate metabolism on sleep and therefore life quality at the molecular level.
**Keywords:** Adropin, C-reactive Protein, Inflammation, Obstructive Sleep Apnea Syndrome.

**S-021**
**THIOL/DISULFIDE BALANCE IN ACTIVE ULCERATIVE COLITIS**

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BACKGROUND AND AIM: Ulcerative Colitis is an inflammatory bowel disease of unknown cause. The aim of our study is to investigate thiol and disulfide blood levels and thiol/disulfite ratios in patients with active ulcerative colitis and to determine its usability as a new inflammatory marker. METHODS: 35 people diagnosed with active ulcerative colitis by colonoscopy and 35 people with normal colonoscopy and without any acute or chronic disease were included in the study as the control group. Serum native thiol, total thiol and disulfide blood levels, disulfide/native thiol and disulfide/total thiol ratios were measured with the automatic calorimetric method developed by Erel et al. The patient and healthy control group were compared. RESULTS: Total thiol and native thiol and disulfide measurements of the cases did not differ statistically according to the groups. (p>0.05). The disulfide/total thiol (%) value of patient group was found to be statistically significantly higher than the the control group (p=0.030; p<0.05). The disulfide/native thiol (%) value of the patient group was found to be statistically significantly higher than the control group (p=0.048; p<0.05). According to the groups, the diagnostic screening tests and ROC Curve Results for Disultive/Total Thiol and Disulfite/Native Thiol measurements were done. The sensitivity was 60%; the specificity was 74.29%; positive predictive value was 70% and negative predictive value was 65%. CONCLUSIONS: Thiol/disulfide homeostasis (TDH) has a critical role in many cellular activities such as antioxidant protection, detoxification, cell growth and apoptosis. This homeostasis plays a very important role in immune etiopathogenesis and the imbalance in TDH is ulcerative colitis through oxidative stress and tissue inflammation. It is thought to u trigger ulcerative colitis. The changes of the other oxidative stress markers were investigated in ulcerative colitis in the literature and they supported our study. As a result, the increase in disulfide/native thiol and disulfide/total thiol ratios, which indicate thiol/disulfide imbalance in ulcerative colitis as a result of oxidative stress and tissue inflammation, were significant. Therefore, the thiol/disulfide balance is altered in patients with ulcerative colitis and can be used as an inflammatory marker associated with etiopathogenesis.
**Keywords:** thiol/disulfite, inflammatory bowel diseases, ulcerative colitis

**S-022**
**SYSTEMIC IMMUNE-INFLAMMATORY INDEX AS AN ANTI-INFLAMMATORY INDICATOR OF COLCHICINE IN PATIENTS WITH BEHCET'S DISEASE**

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BACKGROUND AND AIM: Behcet's disease (BD) is an autoinflammatory disease characterized by systemic vasculitis. Colchicine is a powerful anti-inflammatory agent widely used in the treatment of BD. It exerts this effect by inhibiting proinflammatory cytokine production by neutrophils and monocytes, and also by inhibiting chemotaxis and adhesion of these cells. To date, hemogram parameters such as monocyte/HDL-cholesterol ratio (MHR) and monocyte/lymphocyte ratio (MLR) and neutrophil/lymphocyte ratio (NLR) have been used as indicators of the anti-inflammatory effect of colchicine. A new parameter called the systemic immune-inflammation index (SII) calculated by neutrophil x platelet/lymphocyte formula has been proposed to be used as a measure of inflammation, prognosis and disease activity in many inflammatory diseases, especially in the field of oncology. In this study, we aimed to evaluate the changes in SII and other hemogram parameters as an inflammatory parameter in Behcet's patients treating with colchicine. METHODS: This study included fifty-nine Behcet's patients who have treated colchicine (3-4 x 0.5 mg/day) and 62 healthy controls. Hemogram parameters that neutrophil, lymphocyte, monocytes, platelets, mean platelet volume (MPV), red blood cell distribution width, plateletcrit (PCT), neutrophil-lymphocyte ratio (NLR), platelet-lymphocyte ratio, monocyte-lymphocyte ratio,

C-reactive protein (CRP), erythrocyte sedimentation rate (ESR) and SII levels were analyzed in the pre-treatment phase and three months after treatment. RESULTS: Despite the decrease in the neutrophil count, the increase in the lymphocyte count was remarkable in the 3rd month of colchicine treatment (p=0.005, p=0.053, respectively). Thus, the decrease in NLR value was statistically significant (p=0.001). Although the decrease in MPV values after treatment was not statistically significant, a significant decrease was observed in PCT levels (p=0.077, p=0.003, respectively). There was a significant decrease in inflammatory markers such as ESR and CRP (both, p<0.001). Similarly, a significant decrease was observed in the SII value (p=0.001). In correlation analysis of SII with CRP and ESR; it was determined that SII had a positive correlation with CRP and ESR. (0.467, p<0.001, r=0.697, p<0.001 respectively) CONCLUSIONS: SII can be used as an effective marker to indicate anti-inflammatory effect of colchicine.
**Keywords:** Behcet's disease, colchicine, Systemic Immune-Inflammation Index, hemogram

**S-023**
**DIAGNOSTIC VALUE OF THROMBOCYTE AGGREGATES IN SARCOIDOSIS BY FLOW CYTOMETRIC ANALYSIS**

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BACKGROUND AND AIM: Sarcoidosis is a granulomatous disease characterized by a multisystemic, hyperimmune response that can frequently involve the lung and lymphatic system. A type IV hypersensitivity reaction, in which T-cells play a role, is seen with cellular immune response. In addition to clinical and radiological findings, non-caseous granulation seen in biopsy material can used in diagnosis. It has been shown that the CD4/CD8 ratio in bronchoalveolar lavage fluid can be used in diagnosis. Platelets promote tissue infiltration at inflammation by extravasation and adhesion of leukocytes to the endothelium. P-selectin is expressed by platelets and endothelial cells and as marker of platelet activation. P-selectin in activated platelets initiates interaction with leukocytes and monocytes, triggers inflammatory cascade and stimulates formation of leukocyte-platelet aggregates. Leukocyte-platelet aggregates increases in prothrombotic tendency such as DM, stroke and MI. In study, it was aimed to evaluate the presence of monocyte-neutrophil aggregates and the availability of CD4/CD8 in peripheral blood in sarcoidosis. METHODS: 15 patients with sarcoidosis and 15 healthy individuals were included in study. Lymphocyte surface markers CD4/8 and platelet surface markers CD41a/61/14 analysis were performed on a flow cytometry(BD, FacsCalibur). RESULTS: In study, it was found that there was no difference between CD4/CD8 ratios. When the patient and control groups were compared, a significant difference was found; in monocytic series, CD14/CD61(p<0.001), CD41a(p=0.045) and CD61(p<0.001); in neutrophils, CD41a(p=0.035) and CD61(p<0.001). CONCLUSIONS: By using the data of study, further studies are planned that can contribute to parameters that can be used in diagnosis of sarcoidosis.
**Keywords:** CD4/8, CD41, CD61, Flow cytometry, Sarcoidosis

**S-024**
**THE IMPORTANCE OF TRYPTOPHAN AND ITS METABOLITES IN OBESITY**

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BACKGROUND AND AIM: Tryptophan is an essential amino acid required for the synthesis of kynurenine and its metabolites, which are called kynurenines and are involved in the regulation of the immune system response. Obesity is a metabolic disorder characterized by chronic low-grade inflammation and increased circulating inflammatory markers. Recently, increased inflammation is associated with changes in tryptophan metabolism and the kynurenine/tryptophan ratio is reported to be important. Body mass index (BMI) and abdominal obesity (AO) are methods used in the determination of obesity. The aim of our study is to compare the levels of tryptophan and its metabolites according to BMI and AO classification, and to establish a relationship between increased kynurenine/tryptophan ratio and inflammation. METHODS: A total of 120 patients, whose necessary information and serum samples were taken, were included in the study. 100 µl of internal standard (donepezil), 1000 µl of acetonitrile (containing 1% formic acid) as a precipitating agent was added to 300 µl of sample and vortexed for 30 seconds at 12000 rpm for 10 min. centrifuged, 1000 µl of supernatant was taken into glass tubes and evaporated under nitrogen setup. The residues in the tubes were dissolved in a mixture of acetonitrile:water (25:75) containing 200 µl of 0.1% formic acid, and 40 µl was injected into the LC-MS/MS device and the results were calculated with the help of the calibration chart. Statistical analysis was done with SPSS 22.0. RESULTS: In our study, BMI and AO classifications were evaluated separately and the determination of tryptophan, kynurenine, kynurenic acid, quinolinic acid, 3-hydroxy kynurenine, 3-hydroxy anthranilic acid and kynurenine/tryptophan were made from serum samples. According to BMI, tryptophan levels of normal weights (mean=12743.3) are significantly higher than obese individuals (mean=7597.5) (p=0.003) and overweights (mean=13705.1) are significantly higher than obese individuals (p=0.001). The kynurenine levels of overweight individuals (mean=378.8) were significantly higher than those of obese (mean=246.2) (p=0.044). The kynurenine/tryptophan ratio; It is significantly higher in obese (mean=0.033) compared to thin (mean=0.024) (p=0.027) and normal individuals (mean=0.022) (p=0.0001). According to the AO classification, tryptophan levels are significantly lower in obese (mean=10258.7) than normal individuals (mean=12534.2) (p=0.05), while kynurenine/tryptophan ratio is significantly higher in obese (mean=0.028) compared to normal individuals (mean=0.024). (p=0.033). CONCLUSIONS: In our study, it was observed that tryptophan levels decreased in obese individuals according to BMI and AO classification, and increased kynurenine/tryptophan ratio is thought to be associated with inflammation.
**Keywords:** Inflammation, obesity, kynurenine/tryptophan, tryptophan

**S-025**
**THE EFFECTS OF SOME PHOSPHODIESTERASE5 INHIBITORS ON OXIDATIVE STRESS, VEGF, BMP 2 AND 9 IN THE LIVER TISSUE OF OVARIECTOMIZED RATS**

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BACKGROUND AND AIM: In this study, we aimed to determine the effects of phosphodiesterase 5 inhibitors (vardenafil, tadalafil, and udenafil) on bone morphogenic protein-2 and 9 (BMP-2 and 9), vascular endothelial growth factor (VEGF), and oxidative stress markers (malondialdehyde and CoQ10) in liver tissue of rats with ovariectomy-induced osteoporosis. METHODS: 50 Albino wistar female rats were randomly divided into 5 groups of 10 rats per group. Groups were the sham oparated, ovariectomise (OVEX), OVEX + Tadalafil, OVEX + udenafil and OVEX + vardenafil, respectively. VEGF, BMP-2 and 9 levels were measured by ELISA kits. To detect levels of MDA and CoQ10, we used high pressure liquid chromatograph method RESULTS: The levels of VEGF, BMP-2 and 9 levels in the groups applied PDE-5 inhibitors were significantly higher than the sham and OVEX groups. There was no significant difference between the OVEX+vardenafil and OVEX+udenafil groups in terms of VEGF, BMP-2 and 9 levels. The levels of MDA and CoQ10 were significantly lower in the groups applied PDE5 inhibitors than in the OVEX group. When the histological and immunohistochemical results were examined, it was seen that angiogenesis was significantly higher in PDE-5 inhibitor groups. CONCLUSIONS: In conclusion, we can say that these inhibitors may have positive effects on bone mineralization and remodeling by inducing expression of VEGF, BMP-2 and 9 in liver tissue.
**Keywords:** Osteoporosis, PDE-5 inhibitors, VEGF, BMP, Oxidative stress

**S-026**
**OXIDATIVE STRESS AND INFLAMMATORY STATUS IN CHILDREN WITH UNDESCENDED TESTES**

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BACKGROUND AND AIM: In congenital or acquired undescended testis (UD), the risk of developing infertility and testicular cancer is relatively high. UD disease may affect male infertility and the risk of developing cancer by increasing oxidative stress and inflammation. In our study, oxidative stress status and inflammation markers between children with undescended testis and healthy children with the same demographic characteristics were examined. METHODS: 50 pediatric patients diagnosed with undescended testis and control group who applied to Bezmialem Vakif University and University of Health Sciences Umraniye Health Practice and Research Centers Pediatric Surgery Clinic were included in the study. Blood samples were taken from the patient and control groups, and IL1β, IL6, TNFα, thiol-disulfide

homeostasis, total antioxidant level, and total oxidant levels were measured to determine the oxidative stress and inflammation status. Oxidative stress index and disulfide levels were calculated with a mathematical formula. RESULTS: When the children with undescended testis and the healthy group were compared, the total antioxidant levels, total and native thiol levels were found to be statistically significantly lower in the patient group ($p<0.001$). Total oxidant level, oxidative stress index, disulfide levels, and IL1β, IL6, and TNFα levels were also found to be statistically significantly higher than controls ($p<0.001$). CONCLUSIONS: It has been observed that oxidative stress and inflammation are more common in children with undescended testicles. For this reason, it may be appropriate to evaluate oxidative stress and inflammation parameters biochemically in children with undescended testicles in terms of future infertility and cancer risk.
**Keywords:** Cryptorchidism, Inflammation, Oxidative Stress, Undescended testis

**S-027**
**INVESTIGATION OF THE CELLULAR RESPONSES OF HUMAN DERMAL FIBROBLASTS AND MACROPHAGES SEEDED ON 3D PRINTED THERMOPLASTIC POLYURETHANE SCAFFOLDS**

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BACKGROUND AND AIM: Thermoplastic polyurethane (TPU) is a member of the polyurethane class. TPUs are commonly used in medical applications with their biocompatible, superior mechanical properties and shape memory behavior. In this study, we aimed to examine viability, adhesion properties and expression of collagen IV, CD10, and CD68 in human dermal fibroblasts (HDFs) and THP-1 macrophages on 3D TPU scaffolds. METHODS: HDFs and phorbol-12-myristate-13-acetate (PMA)-differentiated THP-1 macrophages were seeded on 3D TPU scaffolds and cultured for 1, 3, 7, and 14 days. Cell viability was measured by WST-1. Cell adhesion was evaluated by SEM. Cell distribution was analyzed by H&E staining. Expression of collagen IV, CD10, and CD68 was analyzed by IHC staining. RESULTS: The viability of HDFs and THP-1 macrophages on 3D TPU scaffolds was significantly lower than their control groups on days 1 and 3. On day 3, viability of HDFs was significantly higher than day 1. SEM images of HDFs and THP-1 macrophages showed their tissue specific morphologies. H&E staining demonstrated that HDF morphology on days 7 and 14 was smaller than days 1 and 3. THP-1 macrophages showed eosinophilic cytoplasm and large nuclei. Collagen IV staining in HDFs was more intense on days 1, 3 and 7 compared with day 14. CD10 and CD68 staining in THP-1 macrophages were more intense on day 1 and day 3 compared with other days, respectively. CONCLUSIONS: Our results show that 3D TPU scaffolds are biocompatible with dermal fibroblasts and macrophages and might be a potential biomaterial for medical applications.
**Keywords:** 3D Printing, Thermoplastic polyurethane scaffold, Human dermal fibroblast, Macrophage, Tissue engineering

**S-028**
**EVALUATING THE SIMILARITY OF HUMAN AND MAMMALIAN SPECIES' GUT MICROBIOTA**

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BACKGROUND AND AIM: Recent work reveals the importance of natural microbiota. In particular, gut microbiota, called the second brain due to its direct relationship with the enteric neural system, has been shown to have the potential to affect the host's health, along with factors such as the host's diet and body weight. Therefore, identifying gut microbiota members that interact directly or indirectly with the host metabolism and also revealing their interactions with internal and external factors are important issues that can provide practical benefits for human health. By using 16s rRNA metagenomic data and bioinformatics tools, this study aims to compare gut microbiota of mammalian species with human gut microbiota and to evaluate its feasibility as a human gut microbiota model. METHODS: Fecal 16s rRNA metagenomic data for human and other mammalian species were collected from the NCBI and ENA databases. Bioinformatic analyses were carried out with SHAMAN. Quality control was done with AlienTrimmer, paired-end reads were merged with Pear, and operational taxonomic units were obtained by using Vsearch by searching against SILVA and Greengenes databases. With the statistical analysis of taxonomic data, the similarity of human and other mammalian species' gut microbiota was determined. RESULTS: By comparing the microbiome data obtained from all species included in this work, Mus musculus gut microbiota was determined as the most similar to human gut microbiota while Gorilla gorilla microbiota was found as the most distant. Interestingly, the abundance of the bacterial species was significantly different between Mus musculus and Homo sapiens ($p<0.05$). CONCLUSIONS: Although the gut microbiota has been found to differs between human and other mammalian species, our work provides information about the feasibility of microbiota of these species as models that can be used in human gut microbiota studies.
**Keywords:** Microbiota, metagenomics, bioinformatics, 16s rRNA

**S-029**
**COULD FLAVONOLIGNANS FROM MILK THISTLE BE THE NEXT PHARMACOLOGICAL CHAPERONES FOR GAUCHER DISEASE?**

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BACKGROUND AND AIM: Gaucher disease is an inherited metabolic disorder caused by destabilizing mutations in glucosylceramidase (glucocerebrosidase) that converts lysosomal glucosylceramide to glucose and ceramide. The accumulation of glucosylceramide primarily in macrophage lysosomes is thought to be responsible for skeletal, hematological, and other manifestations of the disease. Besides enzyme replacement and substrate reduction therapies, pharmacological chaperoning emerges as an alternative therapeutic intervention for Gaucher disease. Most of the time pharmacological chaperones are low-molecular-weight inhibitory compounds intended to bind to nascent glucosylceramidase variants and alter their conformation, thereby promoting normal folding. METHODS: In the present study, implementing an integrated computational approach, we screened ~10 thousand stereoisomers corresponding to ~3 thousand single-isomer food constituents against glucosylceramidase using molecular docking and optimized the predicted enzyme–inhibitor complexes in the presence of structural water molecules using molecular mechanics. We then inspected top-scoring compounds with different scaffolds to ensure they were involved in energetically favorable non-covalent interactions with the critical amino acid residues lining the enzyme's active-site cavity. RESULTS: The results of our computations indicate that several structurally related flavonolignans from the principal bioactive component of *Silybum marianum* (milk thistle), called silymarin, may reversibly occupy the active site of glucosylceramidase and thus hold the potential to inhibit the enzyme. This inhibition, in turn, can stabilize glucosylceramidase prior to its trafficking towards lysosomes. CONCLUSIONS: We believe that the identified silymarin flavonolignans may proceed to experimental models of Gaucher disease or that their scaffolds may serve as suitable skeletons for the structure-based design of novel pharmacological chaperones for the disease.
**Keywords:** Gaucher disease, pharmacological chaperones, flavonolignans

**S-030**
**MACROPHAGE MIGRATION INHIBITOR FACTOR (MIF) GENE INVESTIGATION OF THE POSSIBLE ROLE OF 173G/C POLYMORPHISM IN SYSTEMIC LUPUS ERYTHEMATOSUS DISEASE**

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BACKGROUND AND AIM: Systemic lupus erythematosus (SLE) is a systemic autoimmune disease involving multiple genetic factors. Genetic background of SLE is complex and includes genes that encode different molecules important in the regulation of the immune system. Studies show that cytokines play an important role in the development and progression of the disease. Macrophage migration inhibitory factor (MIF) is an immunoregulatory cytokine expressed in a wide variety of cell types. There are four reported polymorphisms and the -173G/C polymorphism in the promoter region results in an increase in MIF protein. The purpose of this study is to determine the role of MIF -173G/C polymorphism in SLE disease. METHODS: 44 SLE patients and 44 healthy individuals were included in the study. DNA was isolated from the blood taken into EDTA tubes. Analysis of MIF -173G/C polymorphism was performed on Real Time PCR (LC480,Roche). RESULTS: In MIF -173G/C polymorphism, the frequency of GG, GC, CC genotypes in the patient group was 63.63%, 34.09%, 2.28%, respectively, and 61.36%, 31.82%, 6.82% in the control group. Compared with the GG genotype, those with the GC genotype were 1.03 fold ($p=0.943$) at risk of developing disease, and those with the CC genotype were 3.11 fold ($p=0.339$) less likely to develop disease. Compared with the G allele, those with the C allele were 1.2284 fold ($p=0.579$) less likely to develop the disease. CONCLUSIONS: It was observed that the risk of disease was lower in individuals with the C allele. Therefore, further studies

grouping SLE according to disease severity can be performed.
**Keywords:** Systemic Lupus Erythematosus, Macrophage, Migration Inhibitory Factor, Polymorphism, PCR

**S-031**
**INVESTIGATION PLASMA AMINO ACIDS PROFILE IN PATIENTS WITH BRONCHIECTASIS**

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BACKGROUND AND AIM: Bronchiectasis is a chronic respiratory disease characterized by a chronic cough, sputum production and irreversible pathological expansion of the bronchi associated with recurrent respiratory infections. Amino acids play an important role catabolic and anabolic processes in health and disease. Data on the importance of amino acids in how and where metabolished in certain infections and diseases were mentioned in the available literature Therefore, we evaluated plasma levels of some different amino acids profiles in patients with bronchiectasis. METHODS: Blood samples were taken from 50 bronchiectasis patients and 30 healthy individuals people who had no current disease history or any pathological conditions. Plasma amino acid profiles were measured in LC-MS/MS device. RESULTS: In bronchiectasis patients, the plasma profiles of alanine, arginine, citrulline, glutamine, glycine, lysine, ornithine, phenylalanine, proline, hydroxy proline, valine, anserine, and 1-methyl histidine were significantly increased whereas plasma levels of serine, cysteine, hitamine, taurine, glutamic acid and alpha amino adipic acid were significantly decreased when compared to the control group (P<0.01). Statistically no significant change in other amino acids such as histidin, and methyonin were observed. CONCLUSIONS: Some amino acids play an important role in chronic inflammatory processes since its role in the endothelial and immunological functions. Bronchiectasis affects the plasma levels of some amino acids. We are of the opinion that the decrease in some amino acids will increase the body requirement for them.that may ameliorate bronchiectasis.Moreover knowledge of amio acids profile may contribute to shortening diagnosis and treatment times. More extensive research should be conducted to clarify in details their role in inflammatory and immune processes in briochiatasis
**Keywords:** : Bronchiectasis patients, Free Amino acid profile, LC-MS/MS

**S-032**
**INVESTIGATION OF DOSE DEPENDENT BIOCHEMICAL EFFECT OF CAFFEIC ACID PHENETHYL ESTER ON EXPERIMENTAL OXIDATIVE STRESS GENERATED BY USING PARAQUAT IN A549 LUNG EPITHELIAL CELL LINE**

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BACKGROUND AND AIM: Paraquat (PQ) is a high toxic herbicide. Caffeic acid phenethyl ester (CAPE) is a polyphenol which is one of the active components of propolis produced by honeybees. CAPE is an effective molecule against infection, oxidative stress etc. The aim of this study is to determine the effect of caffeic acid phenethyl ester on oxidative stress induced by PQ in A549 lung epithelial cells. METHODS: 5 cell line groups were formed as control, paraquat, paraquat and 1mikrogram/ml CAPE, paraquat and 2.5 mikrogram/ml CAPE, paraquat and 5 mikrogram/ml CAPE. 400 mikroM paraquat and 1; 2, 5 and 5 mikrogram / ml CAPE were applied to A549 cell lines for 24 hours and at the end of the application time, total oxidant capacity (TOC) analysis, total antioxidant capacity (TAC) determination and oxidative stress index (OSI) calculations were made. RESULTS: TOC values were higher in the PQ group than in the control. TOC values were found to be lower in CAPE group compared to PQ group, but remained a slighty statistical difference. In the PQ group, decreasing TAC values increased significantly with 2, 5 mikrogram/ml CAPE application, while 5 mikrogram/ml CAPE application reduced TAC values compared to the control group. OSI values were higher in the PQ and PQ + 5 mikrogram/ml CAPE groups than in the control group and lower in the PQ + 2.5 mikrogram/ml CAPE group than the PQ group. CONCLUSIONS: it can be said that caffeic acid phenethyl ester is dose-dependent and has protective or therapeutic properties against paraquat induced oxidative stress damage.
**Keywords:** Paraquat, Caffeic acid phenethyl ester, A549, Oxidative Stress

**S-033**
**THE EFFECT OF WEIGHT LOSS BY ACUPUNCTURE THERAPY ON FECAL MICROBIOTA COMPOSITION IN OBESE FEMALE PATIENTS**

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BACKGROUND AND AIM: It was aimed to investigate the effect of weight loss by acupuncture therapy on fecal microbiome, anthropometric measurements and biochemical parameters in obese female patient. METHODS: The study was conducted on 15 obese (BMI; Body Mass Index ≥30) female subjects. The study group was divided into two groups as individuals who received low-calorie diet (diet group, n=6) and diet combined with acupuncture therapy (12 sessions and 12 weeks), (acupuncture group; n=9). The anthropometric measurements, biochemical parameters and fecal microbiota composition at the beginning and at the end of the study (0 and 12 weeks) of the participants who lost at least 10 kg were compared. Pretreatment and posttreatment changes were examined using the 16S rRNA gene as the target gene to represent the microbial genome. RESULTS: A significant decrease was observed in anthropometric parameters and HOMA-IR levels with treatment in diet and acupuncture group. Acupuncture was observed to provide greater reductions in body weight and BMI compared to the group that received diet alone. In addition, it was observed that *Bacteroidia, Prevotella, Butyricimonas, RF39, Coprococcus, Catenibacterium and Tenericutes* taxa came to the fore with acupuncture therapy. CONCLUSIONS: These findings show that acupuncture therapy has an effect on body weight, adipose tissue, lipid metabolism and intestinal microbiota. On the other hand, we believe that more comprehensive studies are needed in order to show the role of acupuncture in metabolism.
**Keywords:** obesity, acupuncture therapy, fecal microbiota, Insulin resistance; homeostasis model assessment of insulin resistance (HOMA-IR)

**S-034**
**ADROPIN, HIF-1α AND APELIN IN THE DIAGNOSIS OF ACUTE MESENTERIC ISCHEMIA**

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BACKGROUND AND AIM: Acute Mesenteric Ischemia (AMI) is a rare disease with a high mortality rate. The lack of a specific biomarker for the diagnosis of AMI causes a delay in diagnosis and treatment, and consequently high mortality. In this study, it was investigated whether Adropin, Apelin, HIF-1α proteins could be markers in the early diagnosis of mesenteric ischemia. METHODS: A total of 60 people were included in the study. Three groups were formed: 20 people (AMI) who applied to the Emergency Medicine Clinic and were diagnosed with acute mesenteric ischemia according to computerized tomography images, 20 people (CA) who applied only with the complaint of abdominal pain, and 20 people (SK) without any health problems. Serums obtained from 5 mL blood samples taken from all participants were stored at -80 0C until the study day. Serum adropin, HIF-1α, and apelin concentrations were measured by the ELISA method. RESULTS: Serum adropin and HIF-1α concentrations in the AMI group were found to be significantly higher than in both the abdominal pain group and the healthy control group (p<0.05). There was no difference in serum apelin concentrations between the AMI group and the abdominal pain group. In the ROC analysis for its usability in differentiating the AMI and KA groups, it was determined that HIF-1α is a moderate (AUC: 0.705) and adropin is a weak biomarker (AUC: 0.692). CONCLUSIONS: Adropin and HIF-1α values, which were observed to be significantly increased in the AMI group, suggest that early diagnosis and therefore early treatment of AMI, which has a high mortality, can be achieved.
**Keywords:** Acute mesenteric ischemia, adropin, apelin, biomarker, HIF-1α

**S-035**
**THE INVESTIGATION OF sSORTILIN, BDNF AND ADAM10 LEVELS IN MAJOR DEPRESSIVE DISORDER**

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BACKGROUND AND AIM: Depression is a frequent, long-lasting episode that causes severe physical and psychosocial disability. According to the 2017 World Health Organization (WHO) data, 4.3% of the world population suffers from depression. Depression is an important public health concern due to diagnostic difficulties, risk of chronicization, suicidal behavior, disability and economic loss. This study was designed to investigate the potential of BDNF, sSortilin and related ADAM10 levels for their potential to be biomarkers in the diagnosis and severity of major depressive disorder (MDD). METHODS: In order to determine the relationship between these markers and the severity of the disease, we classified the depression into three groups according to the Hamilton Depression Rating Scale (HAM-D). The study included 105 patients who were admitted to the Department of Psychiatry of Recep Tayyip Erdogan University School of Medicine Hospital for the first time and underwent HAM-D, and 59 subjects with similar demographic characteristics, which acted as the control group. Serum BDNF, sSortilin and ADAM10 levels of both groups were measured by ELISA. RESULTS: BDNF and sSortilin levels were found to be significantly lower in patients compared to controls. Although serum ADAM10 levels were lower in patients, it was not statistically significant. There was a positive correlation between BDNF and sSortilin and ADAM10 levels in both groups (r = 0.678, r = 0.642 for BDNF and sSortilin, respectively). There was a negative correlation between sortilin and HAM-D. There was a very good correlation between BDNF and sSortilin in both groups. In addition, in the patient group, all 3 markers showed a negative correlation with age, which was significant for BDNF only in females. CONCLUSIONS: The positive correlation of BDNF, sSortilin and ADAM10 for depression suggests that they can be evaluated together as biomarkers for MDD.
**Keywords:** Major depressive disorder, BDNF, sSortilin, ADAM10

**S-036**
**THE EFFECT OF HISTONE DEACETYLASE INHIBITOR SODIUM BUTYRATE TREATMENT ON ERECTILE DYSFUNCTION IN RATS WITH PARTIAL BLADDER OUTLET OBSTRUCTION**

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BACKGROUND AND AIM: Benign prostatic hyperplasia (BPH) is defined as common prostate gland enlargement in middle and older men. Patients with BPH apply to clinic with lower urinary tract symptoms (LUTS) and erectile dysfunction (ED). In previous studies, histone deacetylase (HDAC) inhibitor sodium butyrate reduced inflammation, fibrosis, and oxidative stress in different animal models. The effect of sodium butyrate on ED was investigated through inflammation, oxidative stress and fibrosis in partial bladder outlet obstruction (PBOO) rat model. METHODS: In our study, Sprague-Dawley male rats divided into four groups: 1) Control (n=6), 2) Sodium butyrate-treated control (n=6), 3) PBOO (n=7), 4) Sodium butyrate-treated PBOO (n=7). Sodium butyrate (20 mg/kg/day) administered orally for six weeks. In vivo erectile responses, relaxation and contraction responses in cavernosal tissue were measured. Neuronal nitric oxide synthase (nNOS), endothelial NOS (eNOS), transforming growth factor (TGF)-β, nuclear factor kappa B (NF-κB), nuclear factor erythroid 2 (Nrf2) gene and protein expression were determined by RT-PCR and western blot. Fibrosis and nNOS, eNOS, and TGF-β localization were determined by Masson's Trichrome and immunohistochemistry. HDAC activity was measured. RESULTS: Bladder weight in PBOO group showed a significant increase, and no improvement was observed with treatment. Sodium butyrate improved decreased intracavernosal pressure/mean blood pressure, nitrergic and endothelium-dependent relaxation responses, and contractile responses to phenylephrine and electrical stimulation in PBOO group. Sodium butyrate reduced an increase in TGF-β and NF-κB gene expression in obstructed group. In Western blot, sodyum butyrate ameliorated increased TGF-β protein expression in obstructed group; decreased nuclesolic Nrf2 and NF-κB protein expression in PBOO did not change with treatment. In immunohistochemistry, increased TGF-β, decreased nNOS protein density and decreased smooth muscle/collagen ratio in PBOO were reversed by treatment. An increase in HDAC activity in obstructed rats was reduced by sodium butyrate. CONCLUSIONS: Sodium butyrate facilitates erectile function recovery, which is likely related to downregulation of increased TGF-β gene and protein, NF-κB gene expression, fibrosis and upregulation of decreased nNOS protein in PBOO rat model.
Acknowledgements: This study was supported by the project (No. 219S720) funded by the Scientific and Technological Research Council of Turkey (TUBITAK)
**Keywords:** Benign prostatic hyperplasia, Erectile dysfunction, Lower urinary tract symptoms, Partial bladder outlet obstruction, Sodium butyrate

**S-037**
**IRON METABOLISM IN BARIATRIC SURGERY PATIENTS**

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BACKGROUND AND AIM: Body iron support and stores are evaluated by direct and indirect methods in the laboratory. In this study,our aim is to investigate the effects of laparoscopic sleeve gastrectomy (lsg), one of the bariatric surgery methods used in the treatment of obesity, on serum iron, iron binding, total iron binding capacity(tibc) and ferritin metabolism. METHODS: Preoperative blood values, postoperative third month blood values and anthropometric measurements of 58 patients who had LSG surgery in the general surgery service of Bakirkoy Dr. Sadi Konuk Training and Research Hospital in 2019 were retrospectively analyzed. Serum iron and tibc were analyzed by colorimetric method in Beckman Coulter AU5800 device and ferritin was analyzed by chemiluminescence method in Beckman Coulter DXI 800 device RESULTS: According to the preoperative blood samples of the evaluated patients,blood samples taken in the third postoperative month were statistically significant with an average decrease in iron binding value of 36.53±63.98 units, an average decrease value of tibc of 41.94±60.65 units, an average decrase value of ferritin of 16.73±64.75 units. (p=0,001; p<0,01) (p=0,001; p<0,01) (p=0,021; p<0,05) Changes in serum iron measurements did not differ statistically significantly. (p>0.05) CONCLUSIONS: The serum iron level is an indicator of the iron content, while the ferritin level is an indicator of iron reserves. The low levels of ferritin and iron indicate iron deficiency, which is another important reason for anaemia. Intake restriction and malabsorption might be the main reasons for iron deficiency after bariatric surgery.In addition to assessing the total body iron stores, ferritin is also an acute phase reactant that can be synthesized by the stimulation of multiple cytokines. the decline in serum ferritin after lsg represents not only a reduction in body iron stores but also an improvement in inflammation. In patients treated with Lsg, iron metabolism is affected due to absorption and nutritional changes. Strict follow-up of these patients after surgery is important for iron metabolism.
**Keywords:** Bariatric Surgery, Laparoscopic Sleeve Gastrectomy, Iron Metabolism

**S-038**
**VITAMIN B12 AND FOLATE MONITORING IN LAPAROSCOPIC SLEEVE GASTRECTOMY**

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BACKGROUND AND AIM: Folate and B12 are important vitamins that act as coenzymes for metabolic reactions in our body. Neuropsychiatric findings such as peripheral neuropathy, ataxia, dementia, psychosis and megaloblastic anemia can be seen in their deficiencies. We aimed to investigate the effect of laparoscopic sleeve gastrectomy (LSG), one of the obesity surgery methods, on B12 and folate levels. METHODS: In 2019, anthropometric measurements of 58 patients aged 18-59 years who applied to the general surgery service of Sadi Konuk Training and Research Hospital with a body mass index > 40 and underwent LSG surgery, B12 and folate measured at preoperative (pre-op) and postoperative (post-op) 3 months Values were analyzed retrospectively for 1 year. B12 and folate values were studied with the chemiluminescence method in BeckmanCoulter DXI 800 device. RESULTS: As a result of statistical data, pre-op and post-op folate measurements mean±SD(7.92±3.32;6.58±2.46),pre-op and post-op B12 measurements mean±SD

(239.91±121.72; 268.09±219.47). When the values measured before the operation and at the 3rd month after the operation are evaluated, the change; while it was not statistically significant for B12 (p> 0.921), it was significant for folate (p<0.01). CONCLUSIONS: Vitamin and mineral deficiencies seen in patients after LSG surgery may be due to both the effect of the surgical technique and the changing diet. Since vitamin B12 can be stored, deficiency may occur in the late period, although not in the early period. Folate levels were also observed to decrease in our patient group even in the early period. Long-term diet and metabolic status of these patients should be followed up in a multidisciplinary manner.
**Keywords:** Laparoscopic Sleeve Gastrectomy,B12 vitamin, Folate, Diet

**S-039**
**VEGF AND TGFβ-1 LEVELS IN ALZHEIMER'S DISEASE**

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BACKGROUND AND AIM: It has been reported that mechanisms related to angiogenesis are effective in the pathogenesis of Alzheimer's disease. Vascular Endothelial Growth Factor (VEGF) and Transforming Growth Factor Beta-1 (TGFβ-1) are neurotrophic and neuroprotective cytokines that have an important role in angiogenesis. In line with this information, VEGF and TGFβ-1 levels were determined in late stage AD and it was aimed to evaluate the disease in terms of pathogenesis. METHODS: In this study, serum VEGF and TGFβ-1 levels were measured by ELISA method in 30 late-stage AD patients and 30 individuals in the control group. RESULTS: Age and gender distributions of AD and controls were similar. Serum VEGF levels were found to be statistically significantly lower in the AD group than in the control group (1373.66±486.07 vs. 986.27±261.44 ng/L, p<0.001). TGFβ-1 levels were also found to be significantly lower in the AD group compared to the control group (21.26±3.77 vs. 24.63±2.73 ng/ml, p<0.001). CONCLUSIONS: The decrease in serum levels of VEGF and TGFβ-1 AH patients supports the results reporting the role of angiogenesis in the pathophysiology of the disease. In the mean time, it suggests that decreased VEGF and TGFβ-1 levels in AD may be related to disease progression, neurodegeneration, and amyloid deposition.
**Keywords:** Alzheimer's Disease, Vascular Endothelial Growth Factor, Transformative Growth Factor Beta-1

**S-041**
**A COMPARISON OF IRON, FOLATE, AND VITAMIN B12 DEFICIENCY RATES OF FEMALE CITIZENS AND IMMIGRANTS OF REPRODUCTIVE AGE**

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BACKGROUND AND AIM: It was aimed to compare women aged 15-49 years who applied to the Public Health Laboratory according to their legal status for Iron, Folate, and Vitamin B12 deficiencies. METHODS: Ferritin, Folate, and Vitamin B12 results of women aged 15-49 years who applied to Bilecik Public Health Laboratory between 1 October 2020 and 1 July 2021 were obtained from Fonet Laboratory Information System. These people were divided into two groups that the citizens of Turkey as first group and the immigrants as the second group. Levels of <15 ng/ml for Ferritin, <4 ng/ml for Folate, and <203 pg/ml for B12 were accepted as deficiency. Comparison of deficiency rates was performed using the Chi-square test. For statistically significant differences, the p value was determined as two-way <0.05. Statistical analysis was performed using MedCalc® 20.009 (MedCalc Software Ltd, Ostend, Belgium). RESULTS: Iron deficiency was detected at 51.4% and 51.1% in the first and second groups, respectively (p>0.05). It was determined that there was 3.3% Folate deficiency in the first group, and no Folate deficiency was observed in the second group (p>0.05). B12 deficiency was detected at 11.1% and 11.5% in the first and second groups, respectively (p>0.05). CONCLUSIONS: No difference was observed between the groups for Iron, Folate, and B12 deficiencies. It might be recommended to increase the consumption of iron-containing foods to eliminate Iron deficiency.
**Keywords:** Iron deficiency, Folic acid deficiency, immigrants, Public Health, Vitamin B12 deficiency.

**S-042**
**A DECISION SUPPORT SYSTEM TO IDENTIFY DOWNEY CELLS FROM LEUKOCYTES VIA ARTIFICIAL INTELLIGENCE**

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BACKGROUND AND AIM: Downey cell is the atypical lymphocyte of infectious mononucleosis. It can be seen in a variety of conditions, but are often increased in infectious mononucleosis due to Epstein-Barr virus (EBV) infection. These cells can be identified through peripheral blood smear (PBS) for the diagnosis. Manual microscopy is the gold standard to evaluate Wright-Giemsa stained peripheral blood smear (PBS). As an alternative to manual microscopy, slide scanner systems (Mantiscope, Sysmex, etc…) are used to digitize the biological samples and make them available for physicians to analyze the samples with Artificial Intelligence (AI) tools. The main objective of this study is to create a decision support system (using AI) that can alert the physician for this type of cells to increase the rate of true diagnosis. METHODS: A dataset (PBS slides) examined via manual microscopy is collected from 25 patients with infectious mononucleosis and 124 healthy controls. Mantiscope slide scanner system is used to digitize the PBS slides. Each slide is scanned with 100x magnification via collecting approximately 400 images per slide. Physicians have annotated the digitized images through Mantiscope's cloud-based annotation platform and labeled the cells as leukocytes, blasts and Downey cells. Data augmentation methods such as mirroring in vertical/ horizontal/ vertical and horizontal are used to create a balanced dataset to train deep learning-based AI platform. Objective measurement metrics (sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV)) are calculated to create insights about the effectivity of the decision support system. RESULTS: For a large variety of dataset comprising each normal leukocyte type and including blasts, identification of Downey can be performed with a higher sensitivity and specificity of 0.97 and 0.98, respectively. Cohen's kappa analysis was conducted to evaluate the agreement between physicians and AI in terms of the presence of Downey cells. Kappa value was calculated as 0,93 and obtaining this value between 0,81 and 1,00 was accepted as an indicator of high agreement. CONCLUSIONS: This algorithm for the identification of Downey cells to facilitate the accurate diagnosis can be applied over the digitized images collected from the slide scanners and can also provide a helpful preliminary diagnosis to the physician. AI-based systems in hematology will help the physicians in the diagnosis and treatment of diseases and their success rates will increase day by day.
**Keywords:** Artificial intelligence, peripheral blood smear, Downey cell

**S-043**
**INVESTIGATION OF THE TRYPTOPHAN KYNURENINE PATHWAY IN PATIENTS WITH SEVERE ACNE VULGARIS**

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BACKGROUND AND AIM: Our aim in this study is to investigate the role of tryptophan and kynurenine metabolites in the pathogenesis of acne, an inflammatory disease with oxidative damage. METHODS: Our study was carried out on 30 female patients with severe acne and 30 control groups. 100 µl of internal standard (donepezil) and 1000 µl of acetonitrile (containing 1% formic acid) as a precipitating agent were added on 300 µl serum and vortexed for 30 seconds. Then, it was centrifuged at 12 000 rpm for 10 minutes, and 1000 µl of supernatant was taken into clean glass tubes and evaporated under nitrogen setup. The residues in the tubes were dissolved in acetonitrile:water (25:75) mixture containing 200 µl of 0.1% formic acid, and 40 µl was injected into the device. Chromatographic separation was performed by Shimadzu HPLC system using a Phenomenex Luna C18 (50x4.6mm,5µm; part no: 00B-4041-E0) column. The mobile phase component was applied by gradient elution as mobile phase A: HPLC grade water containing 0.1% formic acid, mobile phase B: acetonitrile containing 0.1% formic acid. API 3200 triple quadrapol mass spectrometer equipped with an electrospray ionization interface was used as the detector (Applied Biosystems / MDS Sciex). RESULTS: Serum kynurenine levels (p=0.030) and Kynurenine/Tryptophan (p=0.015) ratio were statistically significantly higher in patients with severe acne vulgaris compared to control group. However, there isn't statistically significant difference between serum tryptophan levels of severe acne patients and control group (p=0.859). CONCLUSIONS: It was observed that the kynurenine levels and the kynurenine/tryptophan ratio increased significantly in patients with acne. We concluded that elevated Cynurenine/Tryptophan ratios may be associated with increased inflammation in patients with acne. However, further studies with a larger patient group are needed on this subject.
**Keywords:** Acne vulgaris, Oxidative stress, Tryptophan kynurenine

**S-044**
**COMPARISON OF LIPEMIA INTERFERENCE CREATED WITH NATURAL ULTRALIPEMIC MATERIAL AND INTRAVENOUS LIPID EMULSION IN COAGULATION TESTS**

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BACKGROUND AND AIM: Lipemia interference studies related to coagulation tests generally have been performed using intravenous lipid emulsions(IVLE). Our aim is to use natural ultralipemic material(NULM) to mimic the turbidity and to compare these samples with IVLE added samples. METHODS: Fresh and no-turbid residual plasma(Na-Citrate tube) with coagulation parameters within reference ranges was collected and 50 mL plasma pool was prepared. Triglyceride,lipemia index,APTT,PT,D-Dimer and Fibrinogen values were measured in the starting pool. Then, the pool was divided into two parts. IVLE was added to one part, while DULM was added to the other part. 5 additional pools with triglyceride concentrations of 250,500,1000,1500 and 2000mg/dL were prepared. In these pools parameters were re-measured, the mean difference(%) relative to the basal pools was calculated and displayed as interferographs. Mean differences were compared with analytical quality specifications,10% limit and reference change values(RCV).The change in the pools was statistically evaluated.with repeated measures ANOVA. RESULTS: PT and APTT were not significantly affected in IVLE added pools. However, from the triglyceride concentration of 250 mg/dL for APTT and 500 mg/dL for PT in NULM added pools, it was significantly negatively affected by exceeding % bias limit. No interference was observed in fibrinogen and D-Dimer. CONCLUSIONS: t was observed that APTT and PT were affected differently in DULM added pools than IVLE added pools due to the difference in composition, distribution and light absorption or reflection properties of lipoproteins. IVLE is inefficient at mimicking patient samples containing a complex mixture of macromolecular lipid and protein structures.
**Keywords:** Interference, lipemia, pre-analytical phase, chylomicron

**S-045**
**PREVALENCE OF IODINE DEFICIENCY IN CHILDHOOD AND ADOLESCENCE; SINGLE CENTER EXPERIENCE**

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BACKGROUND AND AIM: Iodine is a trace element necessary for the protection of thyroid function, and its deficiency and excess can cause growth retardation and cognitive impairment, especially by impairing thyroid functions. In this study, spot urine iodine levels of pediatric and adolescent patients studied in our laboratory in the last three years and the factors affecting it were evaluated. METHODS: In the Research Biochemistry Laboratory, iodine is studied in spot urine samples with the Sandell Kolthoff method. Between the years 2018-2021, the iodine values of the analyzed children and adolescents between the ages of 0-18 were scanned retrospectively. Year and month of admission, age, gender, weight, height, body mass index, thyroid function tests measured simultaneously with iodine value, autoantibody levels, diagnosis and treatments were recorded from the file records of the patients. Urine iodine value <10 µg/dl was taken as deficiency, and >20 µg/dl was considered as high. RESULTS: A total of 1485 patients, 55% of whom were male, were included in the study. According to their diagnosis; 50,8% were euthyroid, 33,4% subclinical hypothyroidism, 6,6% central hypothyroidism, 5,2% hashimoto's thyroid and 4% congenital hypothyroidism. Iodine deficiency was present in 54,7% of the cases, and 48,7% of them were children in the pubertal period. Iodine excess was detected in 15,4% of the cases, and in this group, the majority (44%) consisted of infants. In cases with congenital hypothyroidism, iodine levels were statistically significantly higher than other diagnoses (p=0,002). Considering the relationship of iodine level with seasons; significant difference was found between autumn and spring seasons (8 µg/dl, 9,5 µg/dl, respectively, p=0,02). The performance characteristics of the spot urine iodine measurement method were determined as 7.07% and 7.84%, respectively, the intraday and interday CV values. CONCLUSIONS: Our study shows that iodine deficiency is still an continuing public health problem in our region. Iodine deficiency has been found to be more common in the pubertal age group, where nutritional disorders are also common. It is thought that iodine level may change according to diagnoses and seasons, it may be effective in nutrition and treatments.
**Keywords:** hypothyroidism, iodine in the urine, retrospective

**S-047**
**EVALUATION OF HEALTHY YOUNG ADULTS IN THE SARS-COV-2 PERIOD ACCORDING TO THE DSM-V EATING DISORDER DIAGNOSTIC SCALE**

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BACKGROUND AND AIM: SARS-CoV-2 The effect of social socialization due to education on stress in eating was investigated by DSM-5 Eating Stress-ScaleDSM. In our study, it was aimed to understand the secondary psychiatric disorders that may develop related to the nutritional behavior in the future and to develop preventive measures that can be taken. METHODS: In the study, 593 young adults between the ages of 18-65; DSM-V Eating Disorder Diagnostic Scale (EDDS-DSMV) questions were translated into Turkish and posed. Only healthy volunteers in the specified age range, who did not have any metabolic, psychiatric and neurodegenerative diseases and who had not undergone any surgical intervention in the last 3 months were included in the study. SPSS 21 statistical program was used to determine the data. RESULTS: According to the American Psychiatric Association DSM-V Diagnostic Scale for Eating Disorders, those who consumed unusually large meals (13 times or more in the last 3 months) did not induce vomiting, did not use laxatives or diuretics, did not prefer intermittent fasting, and did not prefer intense exercise to counteract the effects of eating.. However, among the participants, those who ate large amounts of food despite not feeling physically hungry during the eating episodes reported feeling upset after these episodes. CONCLUSIONS: According to the DSM-V Eating Disorder Diagnostic Scale (EDDS-DSMV) in our study, binge eating disorder was significantly more significant ($p<0.001$) compared to other diagnoses. The rate of those who feel overweight is 74.4%, the rate of those who think that they are perceived as overweight from the outside is 69.6%, the rate of those who are afraid of gaining weight and getting fat is 72.2%. It will be a meaningful initiative for public health to include healthy volunteers, who have not yet applied to the clinic, but are included in the diagnosis of binge eating disorder in scaling, with a psychobiochemical approach in which their psychological status can be followed up in primary health care services.
**Keywords:** Eating disorder, DSM-V, preventive nutrition, binge eating, SARS-CoV2

**S-048**
**THE RELATIONSHIP OF LEUKOCYTE SUBGROUPS WITH CYTOKINS IN COVID-19 PATIENTS**

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BACKGROUND AND AIM: The source of COVID-19, which was declared a pandemic in March 2020, is coronavirus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Our immune system to eliminate infectious agents such as SARS-COV-2; It uses cellular elements such as lymphocytes, monocytes/macrophages, neutrophils, dendritic cells, NK cells and platelets, dissolved molecules such as cytokines, chemokines, acute phase proteins and complements that work in harmony with each other. Cytokines are regulatory proteins. They undertake tasks such as proliferation, differentiation and activation of cellular elements such as leukocytes. In this study, it was aimed to investigate relationship between cytokines and immunophenotypic characters of leukocyte subgroups in COVID-19 patients. METHODS: In this study, 51 COVID-19 patients (18-71 years) were included who outpatient applied to Mersin University Hospital and were positive for COVID-19 according to PCR (Bio-Speedy RT-qPCR Detection Kit, Bioeksen, Turkey) analysis. Samples taken on the application day were included in the study. Immunophenotype analyzes were measured by flow cytometry using the FACSCalibur (Becton Dickinson, USA) instrument. Cytokine levels (IL-1β and IL-6) were studied with the ELISA method (DSX-4-Plate Automated, Dynex, USA). RESULTS: Correlations of cytokines and leukocyte subgroups were examined, respectively, in CD3+ T-lymphocytes (r=-0,034-r=-0,096), CD4+ T-Helper (r=-0,035-r=-0,074), CD8+ T-cytotoxic (r=0,097-r=0,135), CD19+ B-lymphocytes (r=0,020-r=0,09), HLA-DR+ lymphocytes (r=0,064-r=0,006), CD56+ NK cells (r=-0,023-r=0,57). No correlation was observed between IL-1β and IL-6 and leukocyte subgroups (P>0.05). A strong positive correlation was found between IL-1β and IL-6 (r=0.894, $p<0.05$). CONCLUSIONS: New approaches are needed in the treatment of COVID-19 patients, especially in patients with "cytokine storm". Due to do there was no significant correlation between IL-1β and IL-6 and the immunophenotypic characters of leukocyte subgroups, and a strong positive correlation was observed between IL-1β and IL-6, it was thought that monitoring proinflammatory cytokines in patients would be of clinical benefit.
**Keywords:** COVID-19, Cytokine, Immunophenotyping, ELISA, Flow Cytometry

**S-049**
**EVALUATION OF PANNEXIN-1 LEVEL IN COVID-19 PATIENTS**

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BACKGROUND AND AIM: To reveal the possible role of pannexin-1 in the molecular mechanism of the Coronavirus 2019 (COVID-19) disease by evaluating the level of pannexin-1 in intensive care unit (ICU) patients, non-ICU patients and healthy controls. METHODS: 27 healthy controls and 63 COVID-19 patients who applied to Sivas Numune Hospital were included in the study. Of the COVID-19 patients, 33 were IC patients. 30 were non-ICU and pannexin-1 levels were determined using the enzyme-labeled immunosorbent assay (ELISA). C-reactive protein (CRP), ferritin, lymphocyte count and neutrophil count values and some clinical information of the patients were obtained retrospectively. RESULTS: Pannexin-1 levels in healthy control, non-ICU patients and ICU patients were 1.76 ± 0.39, 1.78 ± 0.39, and 1.68 ± 0.42 ng/mL (p = 0.594), respectively. Pannexin-1 levels were found to be 1.65±0.39 and 1.72±0.46 ng/mL, respectively, in patients discharged from intensive care units and those who died (p = 0.630). However, higher CRP (p<0.0001), ferritin (p<0.0001) and NLR (p<0.0001) levels were found in the patients compared to the control group. We determined higher neutrophil lymphocyte ratio in mortal cases (p<0.015). CONCLUSIONS: Since there was no statistically significant difference between groups, we think that the pannexin-1 has not any role in the molecular mechanism of COVID-19. However, when the number of patients in our study is taken into account, our results studies should be supported with other studies involving larger number of patients.
**Keywords:** Pannexin, Covid-19, akut faz reaktanlari

**S-051**
**THIOL LEVEL AND TOTAL OXIDANT/ANTIOXIDANT STATUS IN PATIENTS WITH COVID-19 INFECTION**

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BACKGROUND AND AIM: Accumulating evidence suggests that oxidative stress is closely related to the pathogenesis and severity of COVID-19 infection. Here, we attempted to compare thiol, total oxidant status (TOS), total antioxidant status (TAS) and oxidative stress index (OSI) levels between COVID-19 patients who need and do not need intensive care unit (ICU) support, and determine whether these markers could be used as predictors of ICU admission. METHODS: We recruited 86 patients with COVID-19 infection and classified them into two groups according to the level of care: ICU group (n= 40) and non-ICU group (n= 46). Thiol, TAS, TOS and OSI levels were determined and compared between the two groups. RESULTS: The levels of thiol and TAS in serum were markedly lower in ICU patients than in the non-ICU patients. On the contrary, TOS and OSI levels were markedly higher. Inflammatory markers, including white blood cell, neutrophil, C-reactive protein, procalcitonin and ferritin were negatively correlated with the thiol and TAS, and positively correlated with the TOS and OSI. We determined that areas under the ROC curve for thiol, TAS, TOS and OSI were 0.799, 0.778, 0.713 and 0.780, respectively. CONCLUSIONS: Our results revealed that the increase in oxidative stress and decrease in antioxidant levels in COVID-19 infected patients were associated with worsening of disease. Thiol, TAS, TOS, and OSI parameters can be used to distinguish between ICU patients and those who do not, among which thiol was the best predictor of ICU requirement.
**Keywords:** COVID-19, Oxidative stress index, Thiol, Intensive care unit

**S-052**
**ELEMENTAL ANALYSIS OF DRACAENA CINNABARI BALF. F. RESIN**

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BACKGROUND AND AIM: In this study, it was aimed to determine the element types and amounts by elemental analysis of *Dracaena cinnabari* Balf.f. resin. METHODS: In this study, after powdering *Dracaena cinnabari* Balf.f. resin in a grinder, analyzes were made with a wavelength dispersion X-ray fluorescence spectrometer (WD-XRF-0134).

RESULTS: Plants used medicinally in the world are consumed excessively. In this study, the heavy metal (Ni, Cd, Zn, Cu, Mn, Fe, P, S, Cl, Sr, Ti, Mo, Cd, Sc, V, Co, Ga, As, Rb and Y) and metal (Mg, Al, Ca, Na, K) amounts were investigated with the WD -XRF device. From heavy metals; Ni 245.7ppb, Zn 57.6ppb, Cu 188ppb, Fe % 1.044, P % 0.036, S % 1.137ppb, Cl %0.177, Ti %0.091 and Si %0.97 and Co 2.51ppb, while metals are Mg %0.151, Al %0.27, Ca %1.98, Na %0.044, K %0.162. CONCLUSIONS: In the study, Molybdenum, Scandium, Rubidium, Strontium, Gallium, Cadmium, Vanadyu, Arsenic and Manganese heavy metals and only Yttrium metal could not be detected. It has been determined that it contains the most Ni 245.7 ppb from heavy metals and the most Ca %1.98 from metals.Heavy metal values in the resin; It is noteworthy that some heavy metals are above the recommended critical levels in plants, although it has a rich medicinally nutrient content. Content analysis is necessary to determine the active substances. Quantification and determination of elements are important. By evaluating these data, faster and more precise results will be achieved in anticancer and other medical studies.
**Keywords:** {Dracaena cinnabari} Balf. f., Medicinal plant, Heavy metal, Nickel.

**S-053**
**INVESTIGATION OF THE POSSIBLE ROLE OF MACROPHAGE MIGRATION INHIBITOR(MIF) -173G/C POLYMOPHISM IN ATHEROSCLEROSIS**

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BACKGROUND AND AIM: Atherosclerosis is defined as an inflammatory disease that results in the formation of atherosclerotic plaque caused by the deposition of cholesterol in the arterial intima.As a result of damage to the intima layer of vessel, foam cell formation following cholesterol accumulation and plaque development due to smooth muscle cell increase are observed. Migration of circulating immune cells to vessel wall and inflammation in this region are important in the development of atherosclerotic lesions. In different stages of atherosclerosis, migration of leukocytes to the vessel wall is provided by chemokines. Since it has the same functional properties as chemokines, it was aimed to investigate the possible role of MIF -173G/C polymorphism in atherosclerosis disease due to this function. METHODS: Thirty patients with 70% or more occlusion detected by angiography and 30 healthy individuals were included in the study. DNA isolation was performed from blood samples taken from individuals in EDTA tubes. Analysis was performed on Real Time PCR (LC480, Roche). RESULTS: In the MIF -173G/C polymorphism, the frequency of GG, GC and CC genotypes in the patient group was 55.26%, 41.18% and 66.66% in the control group, 44.74%, 58.82% and 33.33%, respectively. Compared with the GG genotype, those with the GC genotype had a 0.567-fold (p=0.3367) risk of developing the disease, and those with the CC genotype had a 1.6190-fold (p= 0.7038) risk of developing the disease. CONCLUSIONS: In the light of these data, further studies can be done by increasing the number of samples according to the number of occluded vessels.
**Keywords:** MIF, PCR,Atherosclerosis

**S-054**
**DETERMINATION OF ORGANIC ACID PROFILE AND AMOUNTS OF EXTRACTS OF DRACAENA CINNABARI BALF. F. RESIN EXTRACTED USING DIFFERENT SOLVENTS**

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BACKGROUND AND AIM: In this study, it was aimed to determine the organic acid profile and amounts in *Dracaena cinnabari* Balf. f. resin extracted by using different solvents. METHODS: To determine the organic acid profile found in the resin extracts in different solvents; Supelco C18 solid phase cartridge was first conditioned with 3ml of methanol and washed with 10ml distilled water. Ten ml of 2% H3PO4 solution was added to 1 g of the samples, homogenized and filtered. The

eluates were combined and applied to HPLC with an injection volume of 20µl. RESULTS: In terms of organic acid profile, grape vinegar extract of *Dracaena cinnabari* Balf. f. resin including 9 organic acids (Acetic acid(AcA)>Lactic acid(LA)>Succinic acid(SA)>Oxalic acid(OA)>Formic acid(FA)>Citric acid(CA)>Tartaric acid(TA)>Ascorbic acid(AA)>Fumaric acid(FuA)) had the most diversity, and the chloroform extract containing 2 organic acids (OA=AcA) had the least diversity. Five organic acids in methanol extract (OA>AcA>MA>TA>AA), 5 organic acids in ethanol extract (AcA>OA>MA>AA>TA) and 7 organic acids in water extract (LA>FA>TA>CA>OA>AA>FuA) was determined. CONCLUSIONS: In this study, the most detected organic acid in the extracts obtained with grape vinegar was acetic acid (135.70 mg/g). The fact that the variety of organic acids and their amounts is high in the extracts extracted from grape vinegar, only it is thought that it is not caused by the organic acid composition of the resin, but also from the composition of grape vinegar itself. *Dracaena cinnabari* Balf. f. Extracts obtained from resin with different solvents are of great importance in evaluating the results in subsequent cell culture and antimicrobial studies. **Keywords:** {Dracaena cinnabari} Balf.f., Organic Acid, Acetic Acid, Extraction, Vinegar.

**S-055**
**IMMOBILIZATION OF SACCHAROMYCES CEREVISIAE INVERTASE ON CARBOXYLATED MULTIWALLED CARBON NANOTUBES**

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BACKGROUND AND AIM: Invertase, an industrial enzyme, is a glycoprotein that catalyzes the hydrolysis of sucrose and is used in the food industry to produce invert sugar. Invert sugar, which is a 1:1 mixture of glucose and fructose, is an important ingredient in the food industry because it is sweeter and more soluble than granular sucrose. It is used especially by sugar producers to delay the crystallization of sugar in high viscosity solutions. Since immobilized enzymes have many advantages over water-soluble enzymes, the use of immobilized enzymes in industrial applications is increasing day by day. The aim of this study was to use the enzyme Saccharomyces cerevisiae invertase (SCI), which is widely used in the food industry, to produce invert sugar from sucrose by immobilizing it on carboxylated carbon nanotubes (c-MWCNT). METHODS: The conditions affecting the immobilization efficiency (buffer solution pH and concentration, matrix/enzyme ratio and time) were individually changed and optimized. The kinetic properties of free and immobilized enzymes such as optimum pH, optimum temperature and kinetic constants were determined and compared. Invert sugar was produced from sucrose using immobilized enzyme. Quantitative protein and reducing sugar determinations were made using UV/VIS spectrophotometer. RESULTS: By optimizing the immobilization conditions, 100% immobilization and 177.69% activity yields were obtained. immobilization did not change the optimum pH (4.5) and temperature (55°C) of the enzyme. In addition, kinetic constants were determined using Lineweaver-Burk plot. Km values for the free and immobilized enzyme were 215.5 mM and 140.9 mM, respectively, while the Vmax values were 0.0339 µmol/mg.min and 0.0481 µmol/mg.min, respectively. The immobilized enzyme retained its initial activity during 20 consecutive uses and 20 days of storage. By using the immobilized enzyme, invert sugar produced in 4 hours. CONCLUSIONS: So far, the highest activity efficiency achieved in the immobilization of SCI is 92%. Therefore, the 177.69% activity efficiency we obtained in this study is the highest efficiency obtained to date. As a result, it can be said that the enzyme Saccharomyces cerevisiae invertase immobilized on c-MWCNT obtained in this study can be used in the industrial production of invert sugar. **Keywords:** Adsorption, carbon canotube, immobilization, invert sugar, invertase, sucrose

**S-056**
**IMMOBILIZATION OF GLUTATHIONE REDUCTASE ENZYME IN POTENTIOMETRIC BASED BIOSENSOR DESIGN**

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BACKGROUND AND AIM: The importance of biosensors arises in medicine, pharmacy, agriculture, defense and industrial fields nowadays. Biosensors allow the development of commercial sensors because they are fast and economical. By using enzyme-based biosensors, it is possible to make precise and high accuracy measurements. In our study, we aimed to immobilize an enzyme, which is one of the basic steps of enzyme-based biosensor design. For this purpose, Glutathione Reductase enzyme was immobilized to the bioactive layer and the enzyme activity was determined potentiometrically. METHODS: BSA/Gelatin was used as nanopolymer in our study. Gold (Au) was used as the working electrode, silver/silver chloride (Ag/AgCl) as the reference electrode, and platinum wire as the counter electrode. Glutathione Reductase enzyme was dried on the gold electrode surface with BSA/Gelatin and cross-linked with glutaraldehyde. The sensor response of the formed NADPHs was evaluated by determining the optimum operating pH and temperature. RESULTS: Optimum working conditions of Glutathione Reductase enzyme, which was immobilized by using BSA/Gelatin nanopolymer, were determined as pH 7.8 phosphate buffer and 35°C temperature. The enzyme activity was electrochemically calculated by evaluating the NADPHs, which were formed as a result of the activity of the Glutathione Reductase enzyme. Accordingly, the NADPH response formed by the Glutathione Reductase enzyme activity was found to be proportional to each other. CONCLUSIONS: In this study, it was concluded that the response of the Glutathione Reductase enzyme in the bioactive layer was found consistent with the enzyme activity. In this direction, enzyme immobilization, which is the preliminary step for future studies, has been successfully carried out and the expected values have been obtained. In future study, the characterization of the enzyme will be evaluated. **Keywords:** Biosensor, Enzyme Activity, Glutathione Reductase Enzyme

**S-057**
**INVESTIGATION OF THE EFFECT OF MISTLETOE EXTRACT ON METHYL ARGININE LEVELS IN IONIZED RADIATION EXPOSURE**

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BACKGROUND AND AIM: Many radioprotective agents are used to reduce radiation-induced damage.Today,studies with plant extracts, which are investigated as an alternative to chemical radioprotective agents,have gained importance.In our study we aimed to investigate serum methyl arginine levels in irradiated experimental animals by using ethanolic almond mistletoe extract alone or in combination with n-acetyl cysteine. METHODS: Almond mistletoe extract was obtained in a soxhlet extraction device using ethanol as a solvent.In the 14-day experimental study, 38 wistar albino 6-10 weeks old male rats were used.Working groups; control (n=6), radiotherapy (RT) (n=8), RT+ mistletoe (VA) (n=8), RT+NAC (n=8), RT+VA+NAC(n=8) were edited. On the first day of the study, a single dose of 12 Gy RT was applied to the groups to be treated with RT.During the experiment, 500 mg/kg of mistletoe extract was administered by gavage and 275 mg/kg/48 hours of NAC was administered intraperitoneally to the relevant groups every day.At the end of the 14th day, samples were collected by blood collection from the heart under anesthesia.At the end of the study, 2 animals from each group died.Blood samples were centrifuged at 3500 rpm for 10 minutes and serum fractions were separated.The methyl arginine (ADMA, SDMA, L-NMMA), arginine, citrulline, homoarginine levels in serum samples were analyzed by LC-MS/MS device.Statistical analyzes were performed with Kruskal-Wallis rank one-way analysis of variance and Mann-Whitney-U tests. RESULTS: When the statistical differences between the groups were examined, compared to the control group;SDMA levels increased in RT and RT+NAC groups, respectively (p=0.004,p=0.028), and L-NMMA levels decreased in RT, RT+VA, RT+VA+NAC groups (p=0.004,p=0.037,p=0.006), arginine levels increased in the RT+VA group (p=0.025), homoarginine levels increased in the RT and RT+NAC groups (p=0.04, p=0.010), compared to the RT group; It was observed that the SDMA level decreased in the RT+NAC group (p=0.035) and the arginine level increased in the RT+VA group (p=0.004). CONCLUSIONS: When the RT+VA group was compared with the control and RT groups, serum arginine levels were increased, and L-NMMA levels were decreased when RT+VA and RT+VA+NAC groups were compared with the control group.This results suggests that almond mistletoe extract activates nitric oxide synthesis, reduces cellular inflammation and may help protect vascular structure. **Keywords:** Ionizing radiation, mistletoe extract, N-Acetyl Cysteine, ADMA, SDMA, L-NMMA

**S-058**
**DETERMINATION OF SLEEP QUALITY AND HEDONIC HUNGER STATUS OF UNIVERSITY STUDENTS WITH AND WITHOUT NUTRITION EDUCATION**

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BACKGROUND AND AIM: Many impulses and behaviors such as sleep and hedonic feeding are effective on feeding behavior. This study aimed to examine whether these behaviors are affected by nutrition education in university students defined as late adolescence. METHODS: This study was performed at SANKO University Faculty of Health Sciences. Total of 79 students, 60 from the Department of Nutrition and Dietetics, and 19 from the Physiotherapy and Rehabilitation, participated in the research. Pittsburgh Sleep Quality Index (PSQI) was used to define sleep quality and Power of Food Scale (PFS) was used for Hedonic Hunger.

RESULTS: Participants of the 15.2% were male and 84.8% were female; 75.9% of them are from the Department of Nutrition and Dietetics, and 24.1% of them are from the Physiotherapy and Rehabilitation department. The participation rate from 3rd graders is 24.1% and from 4th graders 75.9%. As a result of the chi-square analysis made according to gender, department and class, a statistical relationship was determined between the results given in the PFS and gender ($p < 0.05$). 85.1% of female are hedonic, 14.9% are non-hedonic, 58.3% of men are hedonic and 41.7% are non-hedonic. A statistically significant difference was found in the hedonic impulses PFS according to gender ($p < 0.045$). No significant difference was found in the PSQI ($p > 0.05$). CONCLUSIONS: While there was no effect of getting nutrition education on hedonic nutrition and sleep quality, it was concluded gender did not have an effect on sleep quality, but female had a more hedonic diet.
**Keywords:** Sleep quality, hedonic nutrition, nutrition education, university students

## S-059
## THE DETERMINATION OF EFFECT OF NUTRITION EDUCATION ON EATING BEHAVIOR DISORDERS AND BODY MASS INDEX

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BACKGROUND AND AIM: Eating Disorders (ED) are emotional disorders which accompanied by body weight obsession and body image disorder. Cases such as extreme weakness, beauty and superiority, and health obsession are common today, cause ED such as Bulimia Nervosa, Binge Eating Syndrome, Orthorexia Nervosa, Night Eating Syndrome, Anorexia Nervosa. Nowadays, the age group with the highest prevalence of ED is university students. In this study, it was aimed to determine the ED of Nutrition and Dietetics students and Physiotherapy and Rehabilitation students. METHODS: Total of 80 individuals, 40 from the Department of Nutrition and Dietetics, and 40 from the Physiotherapy and Rehabilitation, of the Faculty of Health Sciences of SANKO University, participated in the study. Rezzy and Ortho-11 scales were used in the study. BMI values were calculated by questioning the participants' age, height and body weight information. RESULTS: Study group included 76.3% of female and 23.8% of male, 41.3% of 3rd grade students, 58.8% of 4th grade students. The mean age of the participants was 22.28±1.23. Gender, departments and classes were compared according to the Rezzy and Ortho-11 scales, statistically significant difference was found the results of the Nutrition and Dietetics Department students. ($p < 0.033$). According to the results of BMI; A statistically significant relationship was found between Rezzy and departments ($p < 0.021$). BMI results of all students were statistically significantly different between departments ($p < 0.003$). CONCLUSIONS: ED and BMI of university students who received nutrition education show a statistically significant difference compared to the group who did not receive nutrition education.
**Keywords:** Eating Disorders, University students, BMI

## S-060
## PROTECTIVE EFFECTS OF A. CALVERTII AGAINST CANCER AND MICROORGANISMS

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BACKGROUND AND AIM: Cancer and antimicrobial resistance are a global problem, and therefore it is very important to search for new sources of potentially effective anticancer and antimicrobial agents of natural origin. In this respect, the antimicrobial and anticancer activities of the flower and leaf extracts of Alcea calvertii used for medical purpose widely grown in province Elazig, were investigated. METHODS: In this study, 10 mg/ml stock extract solutions of plants were prepared and water extracts were analyzed to help microorganisms (3 gram positive bacteria, Staphylococcus aureus, Enterococcus faecalis and Bacillus cereus, 3 gram negative bacteria, Pseudomonas aeruginosa, Escherichia coli and Klebsiella pneumonia and 2 fungal microorganisms)., Candida albicans and Candida tropicalis) broth microdilution method was used to determine the minimum inhibitory concentration (MIC). Cytotoxicity values of plant extracts in various cell cultures such as MCF-7, HUVEC, A549, C6 were also determined. In order to determine the in vitro cytotoxic effect of the existing extracts on cell lines, 10 mg/ml stock extract solutions were prepared. The water extract was prepared by dissolving the stock solutions in the medium. Plant extracts at varying concentrations (1, 10, 100, and 1000 µg/mL) were applied to the cell lines and incubated for 24 hours. The IC50 values in the cells were calculated in the Graphpad program and the concentrations at which the cell death rate was 50% were determined. RESULTS: According to the results of this study, flower extracts of A. calvertii showed significant activity against E. coli bacteria, Also, leaf extracts of A. calvertii showed mild antimicrobial activity on E. coli and P. aeruginosa. When the cytotoxicity values of plant extracts were examined, IC50 value was found to be over 100 µg/mL. In this case, it was concluded that 1-100 µg/mL plant extracts prepared for the flowers and leaves of A. calvertii were not effective in the tested MCF-7, HUVEC, A549, C6 cell lines and did not show cytotoxic activity. CONCLUSIONS: The extracts inhibited the growth of microorganisms used in these tests at different rates. In particular, the results suggest that A. calvertii flower extracts exhibit strong antimicrobial activity against E. coli bacteria and can be used as an alternative to antibiotics. However, since it does not have cytotoxic activity, its effects on cancer are not fully known.
**Keywords:** A calvertii, antimicrobial, anticanser

## S-061
## DETERMINING COLON MICROBIOME IN PATIENTS WITH COLON CANCER

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BACKGROUND AND AIM: Cancer is a major public health problem worldwide and accounted for nearly 10 million deaths in 2020. Colon and rectum cancers are the 3rd most common cancer type in new cases in 2020. Also, colorectal cancers are 3rd most common cancer type in Turkey. Therefore, it is important to determine the components of the developmental process as well as treatment methods. With the advent of high throughput methods in the last decade, the natural microbiome and its correlation to different conditions have been identified. Today, the natural gastrointestinal microbiome is thought to be associated with many diseases, including cancer. The purpose of this study was to profile the colon microbiomes in patients with colon cancers and to predict cancer-associated species by comparing healthy individuals. METHODS: In this regard, we performed high□throughput sequencing of the 16S and 18S rRNA genes on the Illumina Miseq platform which is commonly used to assess microbial diversity. RESULTS: We found Fusobacterium, Parvimonas, and Mucilaginibacter are more common in cancer samples. However, Leuconostoc, Cyanobacterium, and Arthronema were significantly more abundant in the control samples and it is known that bacterial metabolites expressed by these microorganisms have an anti-cancer effect. This work was supported by the grant from Inonu University Research Fund (Project no: FCD-2020-2065). CONCLUSIONS: By providing important information for the microbial components of colon cancer development our work will contribute to understand the developmental process of colon cancer and to the advancement of alternative treatment methods.
**Keywords:** 16S rRNA gene, 18S rRNA gene, colon cancer, metabarcoding

## S-063
## EVALUATION OF ALGINATE-GELATIN POLYMERS IN GLUCOSE OXIDASE-PEROXIDASE MODEL IN ENZYME IMMOBILIZATION IN AMPEROMETRIC BIOSENSORS

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BACKGROUND AND AIM: Enzyme activity the presence of dissolved molecules in the reaction cell can lead to oscillation. To prevent this situation, the enzyme should be adsorbed on a conductive surface connected to the external circuit. Our aim is to investigate the effect of alginate polymers in different combinations and concentrations on the immobilization of amperometric sensors in the glucose oxidase-peroxidase model. METHODS: Cross-linking of glucose oxidase-peroxidase with 2.5% alginate-7.5% gelatin combined polymer and N-hydroxy-succinimide/1-ethyl-3-(3-dimethylaminopropyl carbodiimide) was performed in the amperometric biosensor using a triple electrode system. SEM analyses, FTIR spectra and electrochemical behavior were evaluated. Electrochemical studies were continued by choosing the electrode with the best signal from platinum, carbon and gold surfaces. Analyzes were used at a glucose concentration of 5.5 mmol/L. RESULTS: Homogeneous hollow structures were formed in the presence of alginate, gelatin, crosslinkers and glucose oxidase-peroxidase in SEM images. In FTIR spectrum analyzes, new bonds formed as a result of crosslinking were found to be 3226.33 cm-1 OH, 1555 cm-1 CN, 1632.45 cm-1 C=0 and 1555.31 cm-1 of the newly formed complex structure. It was determined that the highest amperage current was obtained with the Au electrode. Oxidation-reduction peaks were found in the range of 0-1.2 V in the cyclic voltammograms of the amperometric measurements. CONCLUSIONS: Findings obtained from SEM analysis, FTIR spectra and electrochemical measurement results show that the structure formed in the environment where alginate is formed with gelatin and EDC:NHS crosslinker can be used in active layer design.

**Keywords:** Alginate, Amperometry, Biosensor, Glucose oxidase, Gelatin

**S-064**
**THE EFFECT OF METFORMIN ON SALT INDUCIBLE KINASE 1 AND SALT INDUCIBLE KINASE 2 IN MCF-7 CELL AS AN ANTICANCER AGENT**

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BACKGROUND AND AIM: Recent studies have shown that the use of metformin prevents the development and spread of cancer. Metformin may show this effect by increasing SIK1 and SIK2 gene expression. METHODS: For this purpose, MCF-7 cells cultured in appropriate media were divided into 8 groups (1) control, (2) 10 ng/mL TGF-β1, (3) 1.25 mM Metformin, (4) 2.5mM Metformin, (5) 20mM Metformin, (6) 1.25 mM Metformin + 10 ng/ml TGF-β1, (7) 2.5mM Metformin + 10 ng/ml TGF-β1 and (8) 20mM Metformin + 10 ng/ml TGF-β1 doses were administered, respectively. PCR was performed for SIK1 and SIK2 genes, with GAPDH being the reference gene. RESULTS: Administration of 10 ng/mL TGF-β1 to MCF-7 cell significantly increased expression level of SIK1 mRNA by 1.6-fold. In non-invasive (TGF-β1 not administered) MCF-7 cell, 2.5 mM and 20 mM metformin increased expression levels of SIK1 mRNA by 1.8, 3.4 fold and SIK2 mRNA by 1.6 and 3.3 fold respectively. In invasive (TGF-β1 administered) MCF-7 cell, 1.25, 2.5 and 20 mM metformin increased expression levels of SIK1 mRNA by 3.5, 3.7, 4 fold; and SIK2 mRNA by 1.9, 2.4, 3.5 fold, respectively. CONCLUSIONS: Metformin increased SIK1 and SIK2 gene expression dose-dependently in non-invasive and invasive MCF-7 cells, more significantly in invasive ones. The increase in the SIK1 gene was greater than in SIK2. In the light of these results, investigating the effects of metformin on SIK1 and SIK2 genes in different TGF-β1 sensitive cancer types may open new doors for cancer treatment.
**Keywords:** MCF-7, Metformin, SIK1, SIK2, TGF-β1

**S-065**
**INVESTIGATION OF THE CYTOTOXIC, GENOTOXIC AND APOPTOTIC EFFECTS OF CURCUMIN ON BREAST CANCER CELLS**

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BACKGROUND AND AIM: In many preclinical studies, curcumin has been anticarcinogenic in several cancer types. In line with these findings, this research aims to investigate the effects of curcumin on cytotoxicity, mitochondrial membrane potential (MMP), glutathione (GSH), intracellular reactive oxygen species generation (iROS), apoptosis, and DNA damage in breast cancer cell lines. METHODS: The cytotoxic effect of curcumin different concentrations (5-100 μM) on human mammary gland cancer cell lines (MCF-7 and MDA-MB-231), mammary gland; breast/epithelium healthy cell line (184A1) was determined by the colorimetric MTT assay, and the genotoxic effect was determined by alkaline single gel electrophoresis (Comet Assay) method, and its apoptotic effect was determined by the Acridine Orange/Ethidium Bromide (AO/EB) method. In addition, intracellular ROS (iROS) and mitochondrial membrane potential (MMP) levels were measured with the fluorometric method, and glutathione (GSH) levels were measured with the luminometric method. RESULTS: Our study demonstrated that treated curcumin concentrations significantly decreased cell viability, GSH, and MMP levels and increased iROS, apoptosis, and DNA damage in MCF-7 and MDA-MB-231 and 184A1 cells in a dose-dependent manner ($p<0.001$). CONCLUSIONS: The findings confirmed that curcumin cytotoxicity, genotoxicity, and apoptosis in mammary gland cancer cells induce increased intracellular ROS and decreasing GSH and MMP. As a result, these effects of curcumin using different mechanisms showed that it can be a strong candidate for being a potential anticancer drug.
**Keywords:** curcumin, breast cancer, apoptosis, cytotoxicity, genotoxicity

**S-066**
**INVESTIGATION OF THE CYTOTOXIC, GENOTOXIC, AND APOPTOTIC EFFECTS OF 7-HYDROXY-4-CHLOROMETHYL-8-METHYL COUMARIN IN HEPATOCELLULAR CARCINOMA**

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BACKGROUND AND AIM: Hepatocellular carcinoma (HSC) is the fourth most common type of cancer in the world. The choice of treatment depends on tumor characteristics, the severity of underlying liver dysfunction, age, other medical comorbidities, available medical resources, local expertise, and new effective treatment modalities are sought. Coumarins are classified as a member of the benzopyrone family. Its physiological, bacteriostatic, and antitumor activity enables these compounds to be screened as new therapeutic agents. Our study aims to reveal the potential of anticancer drugs by investigating the cytotoxic, genotoxic, and apoptotic effects of 7-hydroxy-4-chloromethyl-8-methyl coumarin extract at different concentrations on HSC cells. METHODS: 7-hydroxy-4-chloromethyl-8-methyl coumarin compound was obtained by using four different solvents, and the highest methanol compound was selected for the study. The cytotoxic, genotoxic, and apoptotic effects of 7-hydroxy-4-chloromethyl-8-methyl coumarin on HSC cells after 24 hours of incubation were investigated. Cytotoxicity was measured by the luminometric ATP method, DNA damage was measured by the comet assay method, and apoptosis was measured with acridine orange/ethidium bromide dye. RESULTS: In our study, after 24 hours of incubation, 7-hydroxy-4-chloromethyl-8-methyl coumarin significantly increased cytotoxicity, genotoxicity, and apoptosis in a dose-dependent manner ($p<0.001$). CONCLUSIONS: The anticancer effect of increasing concentrations of 7-hydroxy-4-chloromethyl-8-methyl coumarin in hepatocellular carcinoma cells showed that it could be a potential drug candidate.
**Keywords:** Apoptosis, DNA damage, Hepatocellular carcinoma, Coumarins

**S-067**
**A NEW AGENT OF LUNG CANCER THERAPY: 7-ETHYLAMINO-4-CHLOROMETHYL COUMARIN**

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BACKGROUND AND AIM: Lung cancer is by far the leading cause of cancer-related deaths in both men and women. Globally, lung cancer cases and deaths are increasing day by day. Today, the search for alternative treatments continues because current chemotherapeutics do not provide success in cancer treatment exactly. It is known that natural and synthetic derivatives of coumarins have bio-physiological effects such as anti-inflammatory, anticoagulant, and antitumor effects. The aim of our study is to investigate the effects of 7-ethylamino-4-chloromethyl coumarin in the treatment of lung cancer in vitro. MATERIALS-METHODS: In our study, the synthesized 7-ethylamino-4-chloromethyl coumarin substance was determined by NMR, then cytotoxic, genotoxic, and apoptotic effects were investigated in the A549 lung cancer cell line and healthy lung epithelial cell line BEAS-2B. Cell viability was determined by ATP method, intracellular ROS level was detected using the fluorogenic dye H2DCF-DA, apoptosis was evaluated by acridine orange/ ethidium bromide dye, DNA damage detected by comet assay, and glutathione levels were measured by luminometric method. RESULTS: After 24 hours of incubation of 7-ethylamino-4-chloromethyl coumarin in healthy and cancer lung cells, cytotoxicity, genotoxicity, apoptosis and intracellular ROS levels increased statistically ($p<0.001$) as the dose increases and had a 20% greater effect on cancer cells. Intracellular GSH levels decreased more in cancer cells and decreased statistically in a dose-dependent manner. ($p<0.001$) CONCLUSIONS: As a result, if the high anticancer effect of 7-ethylamino-4-chloromethyl coumarin, a newly synthesized coumarin derivative, is supported by in vivo animal experiments, it gives hope to become a new therapeutic agent.
**Keywords:** Lung Cancer, Antitumor, DNA damage, Coumarins

**S-068**
**RET G691S POLYMOPHISM IN BREAST CANCER PATIENTS**

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BACKGROUND AND AIM: RET is required for normal development of the brain, thyroid, lung and other tissues. RET activation has been shown to increase proliferation, progression and metastasis in various cancer types. Although genomic alterations in RET in breast cancer have been recently described, results from independent studies suggest that increased RET expression has a key role in breast cancer pathogenesis and response to therapy. There is no study in the literature about RET G691S polymorphism in breast cancer. In our study, we aimed to investigate the RET G691S SNP in breast cancer patients in the Turkish population. METHODS: The study group consisted of who applied to Gazi University Medical Faculty Hospital and Dr. Abdurrahman Yurtaslan Oncology Training and Research Hospital General Surgery Outpatient Clinics it consists of 110 patients diagnosed with breast cancer and 110 healthy women. G691S SNP was investigated by PCR-RFLP method in blood samples taken from the study group into tubes. RESULTS: In the RET G691S region, AA, GA, GG genotypes were found in 8, 38, 64 breast cancer patients and 6, 36, 68 healthy women, respectively. No significant association was found between G691S polymorphism and breast cancer risk in terms of genotype and allele distribution. ($p>0.05$) CONCLUSIONS: It has been reported that RET G691S polymorphism may be a potential risk factor in neuroendocrine lung tumor and desmoplastic melanoma. It has been suggested that the co-occurrence of G691S with S904S polymorphism in papillary thyroid carcinoma may be associated with tumor behavior. In our study, there was not found any association breast cancer risk and G691S polymorphism. However, we think that the G691S polymorphism should be evaluated with larger populations and further studies in this cancer. *Our study was supported by GUBAP with the code 02/2019-3.
**Keywords:** Breast Cancer, RET, G691S, Polymorphism

**S-069**
**EFFECT OF CURCUMIN AND ITS ANALOGUES ON MIR-133B AND THEIR CORRELATION WITH GSTP-1 EXPRESSION IN CISPLATIN RESISTANCE OF OVARIAN CANCER CELLS**

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BACKGROUND AND AIM: The aim of this study was to investigate the effects of curcumin and its analogs (demethoxycurcumin and bisdemethoxycurcumin), which are natural products in human ovarian cancer and cisplatin resistant ovarian cancer cell lines, on cell proliferation and apoptosis after single and combined administration, and to determine the resistance mechanism and related miRNA gene expression changes. METHODS: In order to examine the effect of active substances on cell proliferation, WST-1 analysis was performed in a wide dose range and time period in both cell lines. Apoptosis experiments of all groups were performed at the appropriate dose and time interval determined. In addition, the expression study of a candidate gene (GSTP-1) and microRNA (miR-133b) associated with glutathione metabolism, which is one of the possible resistance mechanisms, in cisplatin-resistant ovarian cancer cell line, was performed by Real Time PCR. RESULTS: As a result of the WST-1 analysis, it was determined that single and combination applications inhibited cell proliferation in both cell lines. It has been shown that the active substances applied in both cell lines induce early apoptosis. Additionally, the combined application of the active substances with cisplatin in the resistant ovarian cancer cell line caused a decrease in the expression level of the GSTP-1 gene and this contributed to the elucidation of the resistance mechanism. CONCLUSIONS: Clarifying the role of glutathione metabolism and miRNA in the mechanism of cisplatin resistance resulted in alternative approaches in the treatment of ovarian cancer with a high mortality rate and reducing the cytotoxic effects of cisplatin with natural compounds. **Keywords:** Curcuminoids, Drug Resistance, miRNA, Ovarian Cancer

**S-070**
**LIPOLYTIC ACTIVITY OF HUMAN SERUM BUTYRYLCHOLINESTERASE**

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BACKGROUND AND AIM: Cholinesterases (ChEs) terminate acetylcholine-induced neurotransmission at cholinergic synapses. There are reports of their involvement in lipid metabolism. We previously showed butyrylcholinesterase (BChE) expression is regulated by essential fatty acids. The similarity of catalytic domain of lipases with ChEs led us to investigate their capacity to hydrolyze various lipids and phospholipids. METHODS: Hydrolysis of 4-methylumbelliferyl (4-mu) palmitate by ChEs was investigated by spectrophotometric methods. Lipolytic activity of BChE purified from human plasma (pr-BChE), commercial BChE (cm-BChE) and acetylcholinesterase (AChE) were compared with various control enzymes (pancreatic (PL) and wheat germ (WGL) lipase. Optimum substrate and pH conditions for all enzymes were determined at 15-10000 µM 4-mU palmitate at pH 7.4 and 8.0. Hydrolysis of 4-mu palmitate was analyzed in time course experiment (2-8 hours) for all enzymes. Last, inhibition kinetics of 4-mu palmitate were studied for BChE enzyme. RESULTS: Results showed pr-BChE can hydrolyze 4-mu palmitate as effectively as WGL at pH 8. AChE didn't hydrolyze 4-mu palmitate. Affinity of the enzymes using 4-mu palmitate as substrate are as follows: WGL (10.4 µM)> pr-BChE (34.2 µM)> PL (129.8 µM)> cm-BChE (186 µM). 4-mu palmitate was found as a competitive inhibitor of BChE. The Ki and IC50 values were 448 µM and 987.2µM, respectively. The lipolytic activity of BChE was also verified using specific inhibitor of BChE and lectin affinity chromatography. CONCLUSIONS: These results display that BChE has lipolytic activity as the first report in the literature. Purified human serum BChE hydrolyzes 4-mu palmitate with an efficiency that is comparable to certain lipase enzymes. **Keywords:** Butyrylcholinesterase, cholinesterases, lipid hydrolysis, 4-mu palmitate

**S-071**
**TARTARIC ACID COATED MAGNETIC NANOPARTICLE SYNTHESIS, IDARUBICIN IMMOBILIZATION AND ITS EFFECT ON ACUTE PROMYELOCYTIC LEUKEMIA (HL-60) CELL LINE**

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BACKGROUND AND AIM: Idarubicin is an anthracycline derivative chemotherapeutic drug used especially in the treatment of leukemias. However, its use is limited due to its serious cardiotoxicity and development of multi-drug resistance (MDR). For this purpose, we used the idarubicin-loaded magnetic nanoparticle (MNP) system in our study to reduce drug toxic effects and MDR. We aimed to show the advantages of using MNP by comparing the gene expression results,cytotoxicity and apoptosis findings of idarubicin-MNP and free idarubicin. METHODS: In this study, Fe3O4-MNP transporters were synthesized. Characterization processes were performed with FT-IR, XRD, C-TEM, FE-SEM methods. After idarubicin immobilization process, MNP-idarubicin complex and free idarubicin were applied to HL-60 cell line, MTT and ATP cytotoxicity tests were performed and IC50 values were calculated. Apoptosis status was evaluated by Annexin V test and the expressions of apoptotic (BAX, NOXA and PUMA), antiapoptotic genes (Survivin and BCL-2) and MDR1 gene were measured by PCR method. Calculated IC50 values were used in the Annexin V test and in the measurement of gene expressions. RESULTS: The IC50 values of MNP-bound idarubicin were 0.210, 0.069 and 0.032 µM for 24h, 48h and 72h, respectively, while 3.106, 0.834 and 0.319 µM for free idarubicin. The percentages of apoptotic/late apoptotic cells in the use of MNP-idarubicin were 59.7%, 88.9% and 98.9% for 24h, 48h and 72h, respectively, and the percentage of necrotic cells was less than 1%. In the use of free idarubicin, the percentages of apoptotic/late apoptotic cells were 30.0%, 48.8% and 16.8% respectively. In expression studies, it was found that the MNP-idarubicin system increased the expressions of apoptotic genes and decreased the expressions of MDR1 and antiapoptotic genes. CONCLUSIONS: MNP-idarubicin was found to be in the range of 20-50 nm. Due to its large structure, it prevented the exit of the drug from the P-glycoprotein-mediated drug pumps out of the cell, thus ensuring that the drug remained in the cell. In addition, the controlled release of idarubicin from the structure ensured the continuity of intracellular drug concentration. By increasing the expressions of apoptotic genes and decreasing the expressions of anti-apoptotic

genes, it stimulated apoptosis and enabled the drug to act at lower concentrations.
**Keywords:** Magnetic nanoparticle, tartaric acid, idarubicin, multidrug resistance

**S-072**
**ROLE OF ENDOGEN ERAD INHIBITOR (SVIP) IN AUTOPHAGY AND LYSOSOME**

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BACKGROUND AND AIM: The endoplasmic reticulum-mediated degradation (ERAD) pathway plays critical roles in cell signaling and the pathophysiology of various diseases including some cancer types. Therefore, the endogenous ERAD inhibitor, SVIP (small VCP-interacting protein) is a promising target for the regulation of several cellular processes. Based on our previous study showing SVIP localization in lysosome of adrenocortical carcinoma cell line H295R, we aimed to investigate the effect of SVIP on autophagy and lysosome function in H295R. METHODS: Firstly, LC3 and p62 protein levels, which are autophagy markers, were evaluated by immunoblotting in the presence or absence of bafilomycin. Then, the effect of SVIP on lysosome acidification was investigated by MDC staining method. Lastly, SVIP and cholesterol interaction was evaluated via Filipin III staining. RESULTS: Manipulation of SVIP expression level did not cause any significant change on p62 and LC3-II levels in H295R cells. However, MDC fluorescence intensity was increased with the downregulation of SVIP, while decreased along with the increase in SVIP levels. These results indicated that SVIP decreases the acidification of lysosome. Next, we investigated SVIP and cholesterol relationship since cholesterol accumulation in lysosome was reported to decrease lysosome acidification. Indeed, we observed co-localization of SVIP and cholesterol. CONCLUSIONS: Our results clearly showed that SVIP do not regulate autophagy in H295R cells. However, SVIP regulates lysosomal acidification, possibly through cholesterol accumulation.
**Keywords:** SVIP, ERAD, lysosome, autophagy

**S-073**
**ANTICANCER ACTIVITY AND EXPRESSION LEVELS OF DUSP GENES OF DOXORUBICIN AND PACLITAXEL DRUGS LOADED ON THE NANOCARRIER SYSTEM IN PROSTATE CANCER**

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BACKGROUND AND AIM: It was aimed to determine the cytotoxic activity of doxorubicin (DOX) and paclitaxel (PTX) drugs loaded in the polyethylene glycol-titanium dioxide (PEG-TiO2) nano-carrier system in prostate cancer cell line (DU-145). In addition, it was aimed to detect changes in the expression of dual specificity phosphatase genes (DUSP1, DUSP2, DUSP4, DUSP6 and DUSP10), which play a role in cell growth, differentiation, apoptosis and tumor formation in the DU-145 cell line to which these drugs were administered. METHODS: TiO2 nanoparticle was synthesized according to the sol gel method and modified with PEG. DOX and PTX drugs were loaded into the PEG-TiO2 nanocarrier system. PEG-TiO2-DOX, PEG-TiO2-PTX, PEG-TiO2, TiO2, DOX and PTX drugs were applied at certain concentrations (0.5-50 µg/ml) to DU-145 cell lines for 24, 48 and 72 hours and IC50 concentrations were determined by the MTT method. IC50 doses of each drug were applied to DU-145 cells and RNA was isolated. Expression levels of DUSP1, DUSP2, DUSP4, DUSP6 and DUSP10 genes in these samples were determined by RT-PCR analysis method. RESULTS: The IC50 concentrations of PEG-TiO2-DOX, PEG-TiO2-PTX, PEG-TiO2, TiO2, DOX and PTX drugs were calculated as 2.42±1.07, 1.72±1.06, 33.92±2.43, 4.99±1.08, 3.48±1.28, 3.32±0.44 respectively. DUSP1 expression decreased 1.54, 2.19, 6.77, 9.25, 143.15, 26.17 fold in TiO2, PEG-TiO2, DOX, PTX, PEG-TiO2-DOX and PEG-TiO2-PTX groups, respectively. DUSP2 expression increased 2.02 fold in the TiO2 group and decreased 2.69, 4.85, 3.38, 1.62, 1.90 fold in the PEG-TiO2, DOX, PTX, PEG-TiO2-DOX and PEG-TiO2-PTX groups, respectively. DUSP4 expression increased 2.99 fold in the TiO2 group and decreased 1.82, 11.24, 2.28, 3.61, 1.28 fold in the other groups, respectively. DUSP6 expression increased 6.92 fold in the TiO2 group, and decreased 5.10, 935.76, 16.11, 117.78, 8.34 fold in the other groups, respectively. DUSP10 expression increased 4.59 fold in the TiO2 group and decreased 4.92, 50.56, 407.31, 1.25, 2.01 fold, in other groups, respectively. CONCLUSIONS: In the DU-145 cell line, PEG-TiO2-PTX significantly reduced cell viability compared to other groups. In DU-145 cell line, PEG-TiO2-DOX and PEG-TiO2-PTX drugs increased DUSP2, DUSP4 and DUSP10 expression and decreased DUSP1 expression compared to free DOX and PTX drugs. In this case, it was determined that DUSP genes may have an effect on prostate cancer.
**Keywords:** Doxorubicin, DUSPs genes, nano-carrier system, paclitaxel, prostate cancer

**S-074**
**IN VITRO CYTOTOXIC ACTIVITY OF ZEOLITE-FOLAT-CHITOSAN NANOPARTICLES LOADED IN THE NANOCARRIER SYSTEM IN DU-145 CELL LINE**

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BACKGROUND AND AIM: In this study, it was aimed to investigate the cytotoxic activity of GO-CTS-FA-Zeolite in prostate cancer cell line (DU-145) and healthy fibroblast cell line (L-929), which is the control group. METHODS: Graphene oxide (GO) nanoparticles used in the study were synthesized according to Hummers method and GO nanoparticles were modified with chitosan (CTS). Folic acid (FA) was attached to the synthesized GO-CTS nanocarrier system and then zeolite was loaded. Suspensions of GO-CTS-FA-Zeolite, GO-CTS and Zeolite at different concentrations were prepared and UV analyzes were performed. These analyzed molecules were applied to the DU-145 cell line and their cytotoxic effect was determined using the MTT method. DU-145 cells were treated with different concentrations (1-100 µM) of GO-CTS-FA-Zeolite, GO-CTS-FA, GO-CTS, GO and Zeolite for 24, 48 and 72 hours. RESULTS: It was determined that the cytotoxic activity of GO-CTS-FA-Zeolite on DU-145 and L-929 cell lines was highest at 72 hours. This molecule was compared with the DU-145 cell line, L-929 control group, Zeolite. It has been determined that GO-CTS-FA-Zeolite inhibits the growth of cancer cells more. CONCLUSIONS: As a result, cytotoxic activities and IC50 values of synthesized molecules on L-929 and DU-145 cells were determined after 24, 48 and 72 hours, and these molecules were found to be more active in DU-145 prostate cancer cell line than L-929 healthy cells. Further in vitro studies are needed on this subject. It should also be investigated in vivo.
**Keywords:** Prostate cancer, Graphene oxide, Chitosan, Folic acid, Zeolite

**S-075**
**THE ROLE OF CYCLIN GENES IN CELL CYCLE CHECKPOINTS IN RESISTANCE TO BORTEZOMIB IN MULTIPLE MYELOMA CELL LINES**

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BACKGROUND AND AIM: Multiple Myeloma (MM) is a type of hematological cancer characterized by the accumulation of malignant plasma cells in the bone marrow. Bortezomib is one of the most effective chemotherapeutic drugs used clinically in the treatment of multiple myeloma. However, resistance to bortezomib is a frequently encountered situation during the cancer treatment process. In tumor cells, increased synthesis of drug transport proteins, suppression of apoptosis and changes in regulation factors involved in cell cycle control are the most important mechanisms that cause resistance to chemotherapeutic drugs. Therefore, in our study, the relationship between bortezomib resistance in multiple myeloma cells and cyclin genes at cell cycle checkpoints was investigated. METHODS: In this study, multiple myeloma KMS-28 (bortezomib-sensitive) and KMS-20 (bortezomib-resistant) cell lines were propagated. Bortezomib IC50 values were determined for both cell lines by applying the MTT test. cDNA synthesis was performed by RNA isolation from cell lines and the expression levels of the cell cycle regulatory factors Cyclin D1, Cyclin D2, Cyclin A1, Cyclin E1 and Cyclin B1 genes were analyzed by Real-Time PCR. RESULTS: While the Cyclin A1 gene was not expressed at all in the KMS28 cell line, it showed a linear increase of approximately 2-fold at 20nM bortezomib, 3-fold at 25nM, and 5.5-fold at 30nM in the KMS-20 cell line. It was observed that Cyclin D1 gene expression was highly increased in KMS-28 cell line (4.2-fold at 20nM, 6.47-fold at 25nM, 5.2 at 30nM), while it was significantly suppressed in KMS-20. CONCLUSIONS: Cyclin A1 gene is not expressed in bortezomib sensitive cells, but its high expression in resistant cells is thought to play a role in the development of bortezomib resistance in multiple myeloma. The increase of Cyclin D1 in bortezomib-sensitive cells induces apoptosis with the pro-apoptotic role of this gene, while the decrease in Cyclin D1 expression in resistant cells causes apoptosis to be suppressed and leads to resistance of these cells. In conclusion, elucidating the mechanisms leading to drug resistance in multiple myeloma will provide an understanding of the disease at the molecular level and will enable more effective treatment options for MM.
**Keywords:** Multiple Myeloma, Bortezomib, Cancer, Drug-Resistance, Cell

Cycle Cyclin Genes.

**S-076**
**INVESTIGATION OF IN VITRO AND IN VIVO ANTI-CANCER EFFECT OF THYMOQUINONE-OXIME ON COLORECTAL CANCER**

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BACKGROUND AND AIM: Colorectal cancer (CRC), also known as bowel cancer, colon cancer, or rectal cancer, develops cancer from the colon or rectum (parts of the large intestine). Although 5-Fluorouracil (5-FU) is the primary antineoplastic used in therapy, its low treatment efficiency has led to the search for new herbal-based agents. Thymoquinone-oxime (TQ-ox), a critical bioactive synthesized component of black seed (Nigella sativa) oil, is known to be promising in the treatment of cancer. Our study aims to investigate the in vitro and in vivo anti-cancer effects of TQ-ox and 5-FU combinations on CRC. METHODS: Cytotoxicity, genotoxicity, apoptosis, i-ROS, glutathione, calcium, and mitochondrial membrane potential were measured in LoVo cells. Cells were given to nude mice by the xenograft method. After four weeks of single and combination therapy, tumor size was measured by in vivo imaging system (IVIS) and caliper. RESULTS: RESULTS: Combination therapy in vitro dose-dependently increased cytotoxicity, iROS, and calcium significantly compared to a single treatment ($p < 0.001$). DNA damage and apoptosis were induced higher in combined therapy than single therapy and increased statistically significantly ($p<0.001$). It was found that it decreased glutathione and MMP levels statistically ($p < 0.01$; $p < 0.001$). Combination therapy in vivo has been found to reduce tumor size by a minimum of 54% compared to a single treatment. CONCLUSIONS: Our results showed that TQ-ox has different anti-cancer properties in vivo and in vitro. The combined use of TQ-ox and 5-FU may be an option for routine therapy.
**Keywords:** Thymoquinone-oxime, colorectal cancer, in vivo cancer model

**S-077**
**DETERMINATION OF THE EXPRESSION LEVELS OF DUSP 1, 2, 4, 6 AND 10 GENES IN PATIENTS WITH EYELID TUMORS**

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BACKGROUND AND AIM: The Dual-specificity phosphatase gene family is critical in various cellular processes involved in cancer. In this study; It was aimed to determine the expression levels of the Dual-specificity phosphatases gene family in patients with eyelid tumors. METHODS: Study patient group consisted of patients diagnosed with eyelid tumor.The study was conducted on the tumor tissue taken from all patients during the surgery and control samples obtained from the normal tissue around the tumor in accordance with the recommendation of the pathologist. The expression levels of Dual-specificity phosphatases 1, 2, 4, 6, 10 genes were determined in 18 samples of eyelid tumor tissue by q-PCR. Glyceraldehyde 3-Phosphate Dehydrogenase was used as the housekeeping gene. Gene expression levels was determined by the ΔΔCt method. RESULTS: The mRNA expression level of dual specificity phosphatase 4 was found to be 7.61 times higher in the patient group compared to the control group, and the mRNA expression level of dual specificity phosphatase 2 was 8.14 times lower than the control group ($p<0.05$). When the mRNA expression levels of dual specificity phosphatase 1, 6 and 10 were compared in the patient group compared to the control group, it was determined as -5.53, 4.26, 1.92, respectively ($p>0.05$). CONCLUSIONS: It has been reported in previous studies that Dual-specificity phosphatases are important in the prognosis of cancer. We obtained data as a result of the experiment supports the previous studies and was determined that in genes levels changed in tumor tissue. Further investigation and recapitulation of the characteristics and differences is of great importance for the roles and mechanisms of Dual-specificity phosphatases in cancer in the future studies are needed to examine the effects in cancer of Dual-specificity phosphatases.
**Keywords:** Eyelid, Tumor, Dual-specificity phosphatases, Expression

**S-078**
**DETECTION OF HPV IN GENOMIC LEVELS BY CAPACITIVE BIOSENSOR**

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BACKGROUND AND AIM: Due to the infectious and proliferative nature of HPV, CA has become a serious threat to public health, and affected patients are prone to frequent relapses and undergo multiple surgical procedures. For the diagnosis of these diseases, cervical fluid can be taken and the diagnosis can be made by performing HPV-6 genome scanning with polymerase chain reaction (PCR). It is of utmost importance to be able to diagnose rapid test per patient. METHODS: For the diagnosis of these diseases, cervical fluid can be taken and the diagnosis can be made by performing HPV-6 genome scanning with polymerase chain reaction (PCR). It is of utmost importance to be able to diagnose rapid test per patient. In this study, an electrochemical biosensor system was developed to determine the 20 base pair DNA sequence specific to HPV-6 only. In this development phase, CRISPR-dCas9 technology, which has an important place in recent years, has been used as a biorecognizer receptor. RESULTS: Accordingly, a standard plot between 100 pM and 500 pM was generated. Afterwards, these impedance curves were calculated and plotted R2 value was found as 0.9885. CONCLUSIONS: In this development phase, CRISPR-Cas9 technology, which has an important place in recent years, was used as a biorecognition receptor. In this way, an alternative measurement system to PCR measurement has been developed.
**Keywords:** biosensor, HPV, capacitance, CRISPR, dCas9

**S-079**
**GENERATION OF TRANSGENIC MOUSE MODELS BY ELECTROPORATION OF CAS9/SGRNA RIBONUCLEOPROTEIN PARTICLES INTO EMBRYOS**

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BACKGROUND AND AIM: Transgenic mouse models constitute an important biological resource category commonly used in basic molecular cellular biology studies where gene/protein functions are investigated and/or when modelling of human disease needs to be done under *in vivo* conditions. To carry out an effective scientific study and subsequently publish the results in elite journals, often genetically modified mouse models need to be used. Development of CRISPR genome engineering tools enabled researchers to create transgenic mouse models easier and faster. METHODS: In one of the new methods gaining prevalance, sgRNAs in complex with Cas9 enzyme (RNP: ribonucleoprotein particles) and single strand donor DNA oligos (ssODN) are transferred to zygote stage mouse embryos by electroporation. Embryos are cultured until the blastocyst stage and transferred to host mice to generate transgenic lines. We have used this methodology to create knockin mutations in several genes. RESULTS: In our *in vitro* experiments, we have successfully generated INDEL and knockin mutations in all genes we targeted. Amongst the embryos we genotyped by restriction analysis, 30-90% carried INDELs whereas knockin efficiency remained low at 20-30%. Detailed inspection of the genotyping results point out that, majority of the cells from the knockin embryos actually carry INDELs rather than the desired point mutations. Thus, RNP electroporation allows gene knockouts with high efficiency and ease. Addition of point mutations to the genomic loci by donor DNA templates is relatively difficult, nevertheless doable. CONCLUSIONS: In pilot experiments, we have generated transgenic mice in our laboratory, by placing a premature STOP codon in the tyrosinase gene locus. As soon as we are able to apply the technology routinely, we will provide collaborative support to researchers in life sciences who are interested in developing and using *in vivo* models for their projects.
**Keywords:** Transgenic mouse models, CRISPR, genome engineering, knockout, knockin

**S-080**
**PREPARATION OF A SELF-ASSEMBLING MONOLAYER BASED MOLECULARLY IMPRINTED POLYMER SENSOR FOR DOPAMINE DETERMINATION**

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BACKGROUND AND AIM: It is aimed to develop a molecularly imprinted polymer-based sensor system with a self assembled monolayer for the determination of dopamine (DA), a catecholamine-class neurotransmitter, which has a very important role in the functions of metabolism and hormonal systems. METHODS: For DA determination, a sensor system was prepared using a screen-printed gold (SPAuE) electrode. SAM were formed by incubation of the Au electrode in 100 mM cysteamine (Cys) solution for 1 hour. Electrode was incubated in 5% glutaraldehyde solution for 45 minutes. Then, the electrode was immersed into aminophenylboranic acid (APBA) solution for 1 hour and the electrode was polymerized in 20mM APBA as monomer, 20 mM PPy-3-COOH and 40mM DA as template. has been subjected. Template removal was carried out in 50mM HCl for 30 minutes. After the optimization of the monomers and template amount, the selectivity of the sensor was made with acetic acid and urea. RESULTS: Optimum concentrations for monomers and template were determined as APBA 20 mM, PPy-3-COOH 20 mM and DA 40 mM. The calibration chart was created using these concentrations. The non-imprinted sensor (NIP) was prepared without adding dopamine to the polymerization solution. It was seen that the NIP sensor did not respond to dopamine. It has been observed that the sensor does not respond to urea and acetic acid and is selective for dopamine. CONCLUSIONS: A fast, selective and sensitive sensor system was prepared for dopamine determination and its applicability to real samples was investigated.
**Keywords:** Dopamine, Sensor, Molecularly imprinted polymer, Self-assembled monolayers, Chronoimpedance

**S-081**
**DEVELOPMENT OF ANTIMICROBIAL PEPTIDE-BASED BIOSENSOR FOR DETECTION OF CIRCULATING PROSTATE CANCER CELLS AS A LIQUID BIOPSY BIOMARKER**

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BACKGROUND AND AIM: CTCs (circulating tumor cells) that give a clear diagnosis of cancer but have a very low concentration in the blood are used for diagnosis by using different methods to assist in the diagnosis of cancer. Their diagnosis is extremely important and valuable because they are less than 10 cells/ml in the blood. In this study, peptide sequences that can be designed in the desired sequence, have no denaturation problems and are easy to modify were selected. METHODS: In this study, we modified a gold electrode (AuE) with cysteamine (Cys), PAMAM (G4), avidin and biotinylated Citropin A, which is an antimicrobial peptide (AMP), as a biorecognition receptor to construct a biosensor for LNCaP prostate cancer cell lines detection. The biosensor makes LNCaP cells affinity-based over AMP binding. The basis of the measurement is electrochemical impedance spectroscopy (EIS). RESULTS: The biosensor showed the performance of the standard graph equation y=0.4325x+293.3 with the measurement range between 1500 and 12000 cells/L. The R squared value was calculated as 0.9927. The repeatability was calculated as 11.09% CV value for 1200 Cell/L concentration, and the reproducibility CV value was calculated as 0.2720%. LOD was calculated as 44.21 and LOQ as 133.98 cells/L. CONCLUSIONS: As a result, a biosensor system with high sensitivity, selectivity and reproducibility has been developed and a sensitive method that can be used in metastasis analysis has been developed.
**Keywords:** liquid biopsy, biosensor, antimicrobial peptide, impedance

**S-082**
**DICLOFENAC DOWN-REGULATES COX-2 INDUCED EXPRESSION OF CD44 AND ICAM-1 IN HUMAN HT29 COLORECTAL CANCER CELLS**

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BACKGROUND AND AIM: Cyclooxygenase-2 (COX-2) is expressed in a variety of human colorectal cancer cells and can contribute to carcinogenesis. This study aimed to investigate the effect of diclofenac (DCF), a selective COX-2 inhibitor, on cell adhesion molecules and apoptosis in human colon adenocarcinoma cells. METHODS: Levels of homing cell adhesion molecule (CD44), intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1) and epithelial cell adhesion molecule (EpCAM) were evaluated in cancer cells overexpressing (HT29) or not expressing (HCT116) COX-2. Cell viability was determined by MTT assay, COX-2 protein levels and activity were assessed by immunofluorescence and fluorometric analysis, respectively. Endogenous levels of polyunsaturated fatty acids (PUFA) were measured by LC-MS/MS while expression of cell adhesion molecules were analyzed by flow cytometry. Annexin V–FITC/propidium iodide-labelling and fluorometric caspase-3 activity measurements were carried out to determine apoptosis. RESULTS: Flow cytometry analysis revealed that the percentage of CD44 and ICAM-1 staining in HCT116 cells were significantly lower compared to HT29 cells. Phorbol 12-myristate 13-acetate (PMA)-induced COX-2 expression and activity in HT29 cells caused a marked increase in CD44 and ICAM-1 levels which were down regulated by diclofenac. Stimulation of COX-2 activity in HT29 cells via PMA significantly decreased diclofenac associated increase in PUFA levels. Treatment of both diclofenac and PMA significantly increased the number of apoptotic cells and caspase-3 activity in colon adenocarcinoma cells compared to control groups. CONCLUSIONS: In conclusion, diclofenac's effect to retard colorectal tumor growth and metastasis occurs in COX-2 over expressing colon cancer cells by increased apoptosis and decreased expression of CD44 and ICAM-1.
**Keywords:** Colon, adenocarcinoma, cell adhesion molecule, apoptosis.

**S-083**
**THE PREDICTIVE EFFECT OF GENERAL FAT KNOWLEDGE LEVELS ON THE RISK OF CORONARY ARTERY DISEASE**

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BACKGROUND AND AIM: The aim of this study was to compare the general fat knowledge levels (GFKL) between patients with coronary artery disease and healthy people, and to determine the relationship between GFKL and the incidence of coronary artery disease (CAD) in these individuals. METHODS: The research was carried out between 15.02.2021 and 15.05.2021 in Istanbul. Participants consisted of 40 adults diagnosed with CAD and 36 adults without CAD. Data were collected with an online questionnaire composed of: "General Information", "Laboratory Findings", "Cholesterol Knowledge" and "Fat Knowledge" sections. For scoring the cholesterol and fat knowledge levels, 1 point was given for each correct answer, and 0 points were given to the wrong answer and does not know the answer. High or low GFKL was determined according to the scoring. While it is expected that individuals diagnosed with CAD have low GFKL values, it has been accepted that healthy individuals will be at risk of CAD if their GFKL values are low. RESULTS: Low GFKL values were found to be correlated at a highly significant level with the total cholesterol and LDL values above the reference value. A highly significant correlation was also found between low GFKL values and triglyceride values above the reference value. A very high level of significant correlation was found between low GFKL values and HDL cholesterol values below the reference value. CONCLUSIONS: The obtained data were evaluated using the chi-square statistical method in the GraphpadPrismV7 program and individuals with low GFKL were found to have a significantly higher probability of having CAD.
**Keywords:** Coronary artery disease, triglyceride, LDL, HDL, cholesterol

**S-084**
**THE INVESTIGATION OF PROTECTIVE EFFECTS OF EPIGALLOCATECHIN-3-GALLATE AGAINST CISPLATIN INDUCED LUNG TISSUE INJURY IN RATS**

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OBJECTIVES: Epigallocatechin-3-gallate (EGCG), anticancer, antioxidative and determined in in vitro and in vivo studies have properties such as anti-inflammatory. In recent years, it has been determined that EGCG has protective and preventive roles against colon, lung and breast cancers. MATERIALS-METHODS: The animal experiments part of this study was conducted in the Firat University Experimental Animal Research Center (FUDAM). In this study, 28 Wistar albino male rats (n = 28, 8 weeks old) were divided into 4 groups and each group included 7 rats. Groups: (i) Control Group: Standard diet, (ii) EGCG Group: Standard diet + EGCG (50 mg/kg bw, ip), (iii) Cisplatin (CP) Group: Standard diet + Cisplatin (CP) (7 mg/kg bw, ip), (iv) Cisplatin (CP) + EGCG Group: Standard diet + EGCG (50 mg/kg bw, ip) + Cisplatin (CP) (7 mg/kg bw, ip) group. The rats were decapitated after 4 weeks and their lung tissues were taken and examined. Lipid peroxidation, MDA (malondialdehyde) levels, catalase activity and GSH (glutathione) levels in lung tissue were determined by spectrophotometer and protein expression levels of caspase-3 and bcl-2 were determined by western blotting technique. RESULTS: Compared to the CP group, MDA levels and bcl-2 protein expression levels were decreased in the EGCG + CP group, while an increase was observed

in the GSH levels, catalase activity and caspase-3 protein expression levels. CONCLUSIONS: As a result of this study, it has been determined that EGCG treatment is a promising drug in the treatment of many diseases in the future by reducing lung damage.
**Keywords:** Lung injury, Apoptosis, EGCG, MDA, Cisplatin

**S-085**
**THE ROLE OF ESTROGEN IN THE CHANGE OF MESENCHYMAL STEM CELL-DERIVED EXOSOMAL miRNAS INVOLVED IN CARDIAC REGENERATION**

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BACKGROUND AND AIM: Clinical and preclinical studies have shown that exosomes secreted by transplanted cells are more effective than direct stem cell transfer in the mechanisms involved in cardiac regeneration following ischemia. The limitation in exosome therapy is lack of understanding of the regenerative properties of injected exosomes. Estrogen is known to be a positive modulator in neo-angiogenesis, cell migration (EMT) and cardioprotection,We aime to examine the change the repertoire of MSC-derived exosomal microRNAs (miRNAs), which play a key role in cardiac regeneration and protection, such as angiogenesis, apoptosis and inflammation upon estrogen treatment. Investigation of the modulatory effect of estrogen on exosomes functionally was also aimed.
METHODS: HUVEC cells were incubated with estrogen induced MSC derived exosomes to analyze tube formation and cell migration capacity of exosomes.The change in the expression of exosomal-miRNAs upon estrogen pretreatment was evaluated by qRT-PCR. A total of 13 miRNA expressions were examined in the study. RESULTS: Estogen treated MSC-exosomes significantly increased the angiogenesis and cell migration capacity of HUVEC cells. Also, estrogen treatmen, significantly and dramatically upregulates exosomal miRNA,which are known as positive modulator in neo-angiogenesis, cell migration (EMT) and cardioprotection; while suppressing miRNAs which act as inhibitors in cell migration and angiogenesis, CONCLUSIONS: Our results support that estrogen changes the exosomal miRNA repertoire and may be effective in angiogenesis in this way. Understanding the pro-angiogenic, pro-myogenic, proliferative, cell migration-inducing, differentiation-inducing and anti-apoptotic, anti-inflammatory roles of exosomes and identification of miRNAs involved in these mechanisms will enable us to use exosomes more effectively in cardiac regeneration therapy..
**Keywords:** exosome, miRNA, mesenchymal stem cell, cardioprotection

**S-086**
**ANALYSIS OF DISULFIDE-LINKED OLIGOMERIZATION OF MUTANT AVP PRECURSORS**

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BACKGROUND AND AIM: Autosomal dominant neurohypophyseal diabetes insipidus (ADNDI) is a rare disease caused by deficiency of antidiuretic hormone AVP which maintains water balance in the body. Mutations in AVP cause ADNDI which is also considered as a neurodegenerative disease. AVP precursors, which could not be folded correctly due to mutations, can accumulate as aggregates in the ER. It also shows that ADNDI is a neurodegenerative disease because mutant AVP can form aggregates due to disulfide bridges and gradually accumulates in the ER by escaping degradation. In this study, disulfide-linked oligomerisation of G45C, 207_209delGGC, G88V, C98X, C104F, E108D and R122H mutations in NPII region of AVP were analysed via immunoblotting. METHODS: Mutations were generated by site-directed mutagenesis followed by In-Fusion Snap Assembly method using pLAVP expression vector containing human AVP coding sequence, and their accuracy was checked by DNA sequencing. 48 hours after the transfection of COS-1 cells with generated vectors, proteins were purified with lysis buffer containing iodoacetamide. They were analyzed by immunoblotting under both reducing and non-reducing conditions. Protein bands were cut from non-reduced gel and load horizontally on 2D-PAGE after reducing to perform a second dimension. The study was supported by TUBITAK SGAB project number with 118S688. RESULTS: It was determined that mutant AVP precursors form disulfide-linked oligomers.
CONCLUSIONS: ADNDI negatively affects the daily life of patients due to excessive urination and thirst. As a neurodegenerative disease, possible damages on brain have been studied. We think that investigations to understand molecular pathology of ADNDI are very important for the development of possible treatments.
**Keywords:** Aggregate, AVP, Neurohypophyseal diabetes insipidus

**S-087**
**INVESTIGATION OF THE EFFECT OF EPIGALLOCATECHIN-3-GALLATE ON PROTEIN EXPRESSION IN RATS INJURED WITH CISPLATIN BRAIN DAMAGE**

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OBJECTIVES: In recent years, it has been seen that many medicinal plants with antioxidant properties have started to be used in the treatment of many diseases. Epigallocatechin-3-gallate (EGCG), the main flavonoid compound of green tea, which is one of these plants, is known to be a catechin with anti-oxidant, anti-inflammatory, anti-diabetic, anti-tumor properties as well as anti-carcinogenic properties. It is stated that EGCG stops cell growth, prevents the proliferation of cancerous cells and is protective against tissue damage. MATERIALS-METHODS: According to this information in our study, brain tissue damage was created with cisplatin and the protective role of EGCG against the damage was investigated. In the study, 28 Wistar albino (n = 28, 8 weeks old) male rats were used. The rats were divided into 4 groups and each group included 7 rats. Groups: (i) Control Group: Group fed with standard diet, (ii) EGCG Group: EGCG (50 mg/kg bw, ip) given group, (iii) Cisplatin Group: Cisplatin (7 mg/kg bw, ip) given group, ( iv) Cisplatin + EGCG Group: EGCG (50 mg/kg bw, ip) + Cisplatin (7 mg/kg bw, ip) given group. The rats were decapitated after 4 weeks and the brain tissues were removed and examined. Expression levels of caspase-3, Bcl-2, Nrf-2, NF-κB, TNF-alpha and COX-2 proteins in brain tissue were determined by western blotting technique. RESULTS: According to our findings, NF-κB, TNF-alpha, COX-2, and Bcl-2 protein expression levels decreased, while caspase-3 and Nrf-2 protein expression levels increased significantly in the Cisplatin + EGCG group. CONCLUSIONS: These results show that EGCG has a restorative effect against brain damage in rats, as well as being a precursor drug against brain tissue damage.
**Keywords:** Bcl-2, COX-2, Caspase-3, Nrf-2, NF-κB, TNF-alpha

**S-088**
**LINALOOL INDUCES OXIDATIVE STRESS AND CELL DEATH IN A DOSE-DEPENDENT MANNER IN YEAST CELLS (S. POMBE)**

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BACKGROUND AND AIM: The aim of this study is to develop *S. pombe* model, which is planned to be used in cell death study, apoptosis and autophagy, and, to understand the potential roles of the genes recruited on programmed cell death mechanisms. Also, the cytotoxicity induced by the linalool molecule is aimed to be enlightened using molecular markers in this study. METHODS: *S. pombe* wild type (*ED666 h- ade6-M210/ura4-D18 leu1-32*) and mutant cells (pca1Δ, aif1Δ, pnu1Δ, rad9Δ, sod1Δ, sod2Δ, atg6Δ, atg8Δ, atg9Δ, atg14Δ) were used in this study. Cells were treated by shaking at 180 rpm at 30 °C in YEL and EMM+lys media. Cell death was shown using AO-EB, CFA and thoma count. Nuclear morphology was assessed by DAPI staining. GFP-ATG8 was detected under the fluorescent microscope in *SHMT80 h- lys1+::Pnmt41-GFP-atg8+* cells, which carry thiamine-repressible nmt41 promotor. RESULTS: 10-40 µM linalool caused a dose-dependent cell death. The results from spot and colony assays did not correlated with DAPI staining (nuclear fragmentation). Cell death rates were not decreased in apoptosis mutants (pca1Δ, aif1Δ, pnu1Δ, rad9Δ). Increase in cell death rates after linalool treatment were observed in antioxidant mutants (sod1Δ, sod2Δ). GFP-ATG8 fluorescent dots were aberrantly increased in a dose-dependent manner (2-4 fold). In addition, a significant decrease in death rates in autophagy mutants (atg6Δ, atg8Δ, atg9Δ, atg14Δ) were observed. CONCLUSIONS: Linalool-induced cell death in *S. pombe* occurred via oxidative stress and autophagy. This study warrants further molecular cell death studies and supports the literature.
**Keywords:** {S. pombe}, linalool, autophagy, oxidative stress

**S-089**
**THE EFFECT OF miR-144 AND miR- 451 EXPRESSION CHANGES ON SICKLE CELL DISEASE**

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BACKGROUND AND AIM: Recently, the use of microRNAs (miRs) as biomarkers for many different diseases has opened up new opportunities in the clinical investigation of epigenetic regulation mechanisms. The aim of this study is to evaluate the expression levels of erythroid-specific miR-144 and miR-451 in patients with

sickle cell disease (SCD) compared to the control group and their clinical impact. METHODS: Fiveteen sickle cell anemia patients and fiveteen healthy people without any systemic disease as a control group were included in this study. After obtaining leukocytes from whole blood, miRNA was isolated and expression levels of miR-451 and miR-144 were analyzed using related probes and primers with real-time PCR. RESULTS: The miR-451 levels were significantly higher in sickle cell anemia patients comparing with control group. The miRNA-144 levels were significantly high in patients with painful crisis in sickle cell anemia patients comparing with control group. CONCLUSIONS: The miR-144 and miR-451 levels were significantly high in HbSS cells. The increase of mir-451 expression in cells with HbSS compared to HbA helps to reduce the risk of parasite infection. Over expression of miR-451 led on raising expression of alpha and beta globin genes than gamma globin. This situation may trigger the crisis period in patients. miR-144 expression changes effect the oxidative stress response and cellular antioxidant defense mechanism. Over expression of miR-144 is associated with severity of anemia and leads to the lack of antioxidant proteins. In conclusion, revealing these changes in erythrocyte miR expression enables the development of new approaches to reduce clinical manifestations in SCD.
**Keywords:** miR-144, miR-451, sickle cell disease, expression

## S-090
## STRUCTURAL BIOLOGY OF THE FTSH-HFLKC COMPLEX INVOLVED IN PROTEIN QUALITY CONTROL

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BACKGROUND AND AIM: Drug discovery, design of therapeutics requires an understanding of the mechanisms of biomolecules such as proteins. Structural biology provides basis of these discoveries. Membrane proteins, which constitute more than 25% of entire cell proteome, mediate interaction with the cell's environment. Their folding and degradation are controlled by chaperones and proteases. FtsH, which has a proteolytic activity, degrades misfolded integral membrane proteins. HflKC modulates proteolytic activity of FtsH by forming a complex with FtsH. Aim of this research is to understand the link between membrane protein folding and quality control using cryo-electron microscopy and X-Ray crystallography. METHODS: For optimum expression of recombinant FtsH-HflKC protein complex, five-different parameters including induction time, inducer concentration, temperature, host cell type, rhamnose concentration were tested. Sonication was used for cell disruption, and optimized. Membrane protein solubilization was carried out by experimenting with two-different protocols at different concentrations of two mild detergents. RESULTS: Results showed that optimum growth conditions of FtsH-HflKC protein complex and HflKC protein were achieved in Lemo21(DE3) cell, at 1mM rhamnose concentration, in the presence of 400µM IPTG, after a 4-hour incubation at 30°C. Optimum sonication conditions were obtained with 3-cycles of 50% amplitude, 1s on/off pulse, while optimized solubilization conditions were obtained with 2-hour incubation performed at 1% Lauryl Maltose Neopentyl Glycol concentration. Studies continue for optimizing purification process. CONCLUSIONS: Results obtained with optimization experiments provide basis for structural studies of proteins. This research will contribute to the development of new antibiotics to overcome the threat of antimicrobial resistance caused by increasingly widespread multi-resistant bacterial strains.
**Keywords:** FtsH, HflKC, Protein Quality Control, Structural Biology, X-ray crystallography

## S-091
## URIC ACID MAY INDUCE PROLIFERATION OF RAT PRIMARY VASCULAR SMOOTH MUSCLE CELLS VIA MAPK SIGNALING PATHWAYS THROUGH TRIGGERING THE INHIBITION OF MITOCHONDRIAL AND CASPASE DEPENDENT APOPTOSIS

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BACKGROUND AND AIM: Hyperuricemia may be a risk factor for cardiovascular diseases such as hypertension and atherosclerosis, but the mechanisms underlying uric acid-induced these pathological conditions remain unknown. In this study, we investigated the effect of short time and long-term administration of increasing uric acid concentrations on cell viability, proliferative and apoptotic pathways in rat primary vascular smooth muscle cells (VSMCs). METHODS: Primary rat VSMCs were isolated from the thoracic aortas of male Wistar rats by enzymatic dissociation. When the cells density reached 70–80%, VSMCs were maintained in FBS-free medium overnight to synchronize the cell cycle and inhibition the influence of serum on cellular functions. After starvation, VSMCs were treated with different doses of uric acid at various time points. Cell viability/proliferation was determined with WST-1 assay kit. Expression levels of mitogen-activated protein kinases (MAPKs) (phosphorylated (p)-p38 and p-p44/42 MAPK), extrinsic (caspase 3, caspase 8), and intrinsic (B-cell lymphoma-extra-large (Bcl-xL)) apoptotic pathway proteins were measured by Western blotting tecniques. RESULTS: Our results indicated that uric acid increases cell viability/proliferation at time and dose-dependently in VSMCs. Western blotting results showed that uric acid treatment elevated the expression level of p-p38 MAPK but did markedly reduce the protein levels of p-p44/42, compared with all the uric acid doses-treated VSMCs, especially at 1h. Uric acid stimulation increased caspase-3 protein levels and decreased Bcl-xL, but did not alter caspase-8 protein expression at the same dose and time. In addition, it appears that extrinsic signaling pathways (caspase 3 and 8) are more resistant than the intrinsic signaling pathways (Bcl-xL) exposed to uric acid dose- and time-range. Furthermore, low uric acid incubations (0-7.5 mg/dL) did not affect any signaling pathways for long time points (6-24h). CONCLUSIONS: The present study might be providing novel evidence supporting the potential proliferation effect and apoptotic activity of uric acid in VSMCs. Consequently, the development of high level of uric acid that directly targets proliferation on VSMCs could lead to disease progression in hypertensive patients with poor prognosis. Nevertheless, future studies will be more needed to delineate signaling mechanisms between proliferation and apoptosis in vascular impairment and dysfunction of contraction that underlie other cardiovascular diseases, especially hypertension.
**Keywords:** uric acid, primary vascular smooth muscle cells, proliferation, MAPK, apoptosis

## S-092
## STRUCTURAL STUDIES OF FtsH AND FtsH COMPLEXES INVOLVED IN PROTEIN QUALITY CONTROL

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BACKGROUND AND AIM: The cell membrane is the main guard of a cell and it comprises crucial proteins to perform vital functions including quality control. FtsH is a membrane-anchored, ATP-dependent metalloprotease and has key roles in the folding/degrading mechanisms of proteins. This study aims to brighten unknown pieces of the puzzle in which FtsH is located in the middle by using advanced structural biology technologies such as X-ray crystallography and cryo-electron microscopy. METHODS: Recombinant *E.coli* FtsH was produced by overexpression of the plasmid construct generated by MultiColi Technology at the University of Bristol. After harvesting the recombinant *E.coli* cells overexpressing FtsH, lysing

and separation of cell membranes were conducted. Because the extraction of a membrane protein is a challenging task,the optimization process was carried out, first. Two host cells (BL21 and Lemo21) were used for protein production; two different mild detergents (n-Dodecyl-B-D-Maltoside, DDM ve Lauryl Maltose Neopentyl Glycol, LMNG) were compared at six different concentrations for solubilization of membranes. In addition to sonication, lysozyme (1mg/ml) was also used at the stage of breaking the cell wall before solubilization of the membrane. For purification of FtsH, affinity chromatography was designed. The purified and concentrated protein was imaged by TEM (Transmission Electron Microscopy). All intermediate steps were monitored by SDS-PAGE. RESULTS: NEB Lemo21 (DE3) host cells were observed to be more favorable for overexpression of FtsH protein. Ideal concentrations for IPTG and arabinose (400µM and 0.2%) were determined for induction of expression in this cell. 0.5% DDM and 1% LMNG were found suitable for cell membrane solubilization. The amount of protein obtained after purification and concentration under the specified conditions was 1.7 mg/ml. CONCLUSIONS: Once the purification of FtsH has been optimized its full-length structure will be determined using cryo-EM. The proteolytic and ATPase activities of FtsH will also be studied with target membrane proteins such as YccA to be cloned and structurally characterized, in the absence and presence of FtsH binding partners, HflKC and YidC. Unraveling the structures of these membranes proteins has a great potential to develop new antibiotics. *This project is sponsored by TUBITAK (2232/118C225).*
**Keywords:** Membrane proteins, FtsH, structural biology, electron microscopy, YccA

**S-093**
**INVESTIGATION OF THE EFFECTS OF BORIC ACID AND ZINC BORATE IN L929 MOUSE FIBROBLAST CELL LINE**

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BACKGROUND AND AIM: This study aims to investigate the effects of Boric acid (BA) and zinc borate (CB), which are the boron products whose usage areas are increasing day by day, on the L929 cell line. METHODS: The L929 cell line (ATCC, USA) was removed from the liquid nitrogen tank and inoculated into a T-75 cm2 flask containing DMEM medium with 10% FBS and incubated at 37°C, 90% humidity, 5% CO2. Cells were seeded with 5x103 cells per well of 96-well plate. The cells were incubated in a CO2 incubator for 24 hours to settle at the bottom of the wells. Then, different concentrations between 0.001 mM and 1000 mM for BA and between 0.001 mM and 1 mM for CB (in %0.01 DMSO) were administered proper wells into the 96 well plates. MTT method was used to analyze cell proliferation levels at 24, 48, and 72 hours with a microplate reader spectrophotometer (Epoch Microplate Spectrophotometer, BioTek, USA). Viability levels were compared with control wells. RESULTS: IC50 could not be calculated since no statistically inhibitory and proliferative difference was observed at all doses of BA on the L929 cell line. On the other hand, proliferative effects at low doses and inhibitory effects at high doses were observed of CB. The IC50 value at 24, 48 and 72 hours was found to be 0.133, 0.197, 0.142 mM. CONCLUSIONS: Even though BA does not show any inhibitory effects on both low and high doses it may has a potential candidate for a new mechanistic studies. It is possible that the inhibitory effect of high dose CB, which is synthesized by the reaction of BA and zinc, is caused by zinc, and its proliferative effect at low doses may be advantageous in the cellular pathways in which zinc plays role.
**Keywords:** boron, boric acid, zinc borate, L929 cell line, proliferation

**S-094**
**INVESTIGATION OF THE EFFECTS OF BORIC ACID AND ZINC BORATE ON MIGRATION IN L929 MOUSE FIBROBLAST CELL LINE**

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BACKGROUND AND AIM: This study was conducted to investigate the possible effects of boric acid (BA) and zinc borate (CB) on migration in L929 mouse fibroblast cell line by using wound healing test. METHODS: L929 cells were cultivated in T75 cm2 flask in DMEM medium containing 10% FBS. Cells were incubated in an incubator providing 90% humidity, 37°C and 5% CO2. 2x10^4 cells seeded in each well in 24 well plates. A line was scratched in all wells 24 hours later. Then images of each well were taken with the 10X lens of the Leica Inverted Microscope. BA and CB were administered at the doses from 0.001 mM to 1000 mM into the wells. Microscope images were taken at the 12th, 18th and 24th hours. RESULTS: Cell migration levels of BA and CB was compared with control groups. As a result, it was determined that all doses of BA and all doses of CB except the highest four doses increased the cell migration levels. CONCLUSIONS: The protective effect of BA on wound healing in a wide dose range in the L929 cell line may indicate that BA is a potential candidate in wound healing. High doses of CB negatively affected wound healing due to zinc. Low doses of CB can used in wound healing. Both compounds should be used for in-vivo studies in wound healing.
**Keywords:** cell migration, wound healing, L929 cell line, bor, boric acid, zinc borate

**S-095**
**DETERMINATION OF THE RELATIONSHIP BETWEEN SERUM STREM-1/STREM-2 LEVELS AND INFLAMMATION IN PATIENTS WITH FAMILIAL MEDITERRANEAN FEVER**

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BACKGROUND AND AIM: Familial Mediterranean fever is an autosomal recessive disease characterized by peritonitis, pleuritis, arthritis and recurrent episodes of fever. We aimed to measure the levels of sTREM-1, sTREM-2, TNF-α and IL-1β in the serum of attacks and remission patients diagnosed with FMF and to examine their relationship with inflammation. METHODS: A total of 57 patients, 27 patients with attacks, 30 patients in remission and 30 healthy controls, who applied to the rheumatology clinic with the diagnosis of FMF were included in the study. CRP, ferritin, fibrinogen and sedimentation levels were measured on the same day from the samples taken on the working day. Serum sTREM-1, sTREM-2, IL-1β and TNF-α levels were studied by ELISA method. RESULTS: Serum sTREM-1 and IL-1β levels were found to be significantly higher in the FMF attack patient group than in the control and remission groups ($p<0.001$). There was no significant difference between the groups for sTREM-2 and TNF-α levels. Sedimentation levels in attack group was found to be significantly higher than those of the control group ($p=0.016$). Fibrinogen ($p<0.001$) and ferritin ($p=0.004$) levels were found to be significantly higher in the FMF attack group compared to the control and remission groups. CRP was significantly different between all three groups ($p<0.001$). In addition, a weak but significantly positive correlations were found between sTREM-1, IL-1β and CRP levels. CONCLUSIONS: Serum sTREM-1 levels are associated with inflammation in FMF patients and may be involved in the pathogenesis of FMF.This study was supported by the Scientific Research Unit of Mustafa Kemal University as project number 20.YL.019.
**Keywords:** Familial Mediterranean Fever, Inflammation, sTREM-1, sTREM-2

**S-096**
**A RAPID, ROBUST AND RELIABLE MEASUREMENT METHOD FOR THE QUANTITATION OF MIRTAZAPIN**

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BACKGROUND AND AIM: Mirtazapine is an atypical antidepressant with noradrenergic and specific serotonergic activity. It has 5-HT2, 5-HT3 and H1 antagonist properties along with alpha-2 antagonism. The recommended dose is between 15-45 mg/day. The most common side effects are dry mouth, sedation, increased appetite. Studies have shown that there is a positive correlation between the plasma concentration of mirtazapine and its clinical and toxic effects. Therefore, measurement of plasma concentrations is important in order to reduce the toxic effects of mirtazapine and to achieve the desired efficacy of the treatment.Our aim in this study was to develop a simple, fast and effective LC-MS/MS method for the quantification of mirtazapine. METHODS: Briefly; 250 µl of sample was taken into eppendorf tubes and after adding 100 µl of carbamazepine (100 ng/mL) and 800 µl of methanol, it was vortexed for 30 seconds and centrifuged at 2000xg for 10 minutes. Supernatants were taken into clean glass tubes and dried at 40°C under nitrogen gas. The dried residues were dissolved in 200 µl of methanol:water (20:80, %v/v). 40 µL was injected. RESULTS: The developed method for the determination of mirtazapine levels was linear in the range of 5-100 µg/L. Total run time was 5 minutes. The precision values were less than 8.5% and the accuracy results ranged from 85.0% to 110.2%. Extraction recovery ranged from 89.1% to 100.7%, and matrix effect values were less than 10%. CONCLUSIONS: A rapid, cost-effective, robust and reliable measurement method has been developed for the quantification of mirtazapine.
**Keywords:** LC-MS/MS, adverse effect, toxicology, mirtazapine

**S-097**
**DEVELOPMENT OF TANDEM MASS SPECTROMETRY METHOD FOR THE DETERMINATION OF HYDROXYZINE HYDROCHLORIDE**

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BACKGROUND AND AIM: Hydroxyzine dihydrochloride is an antihistamine that reduces the effects of natural chemical histamine in the body. Hydroxyzine dihydrochloride is used to treat allergic skin reactions such as hives or contact dermatitis. It is also used to treat anxiety and tension. The most common side effects are drowsiness, headache and dry mouth. Serious side effects include QT prolongation. Therefore, measuring hydroxyzine dihydrochloride levels is important. The aim of this study was to develop an LC-MS/MS measurement method for hydroxyzine dihydrochloride. METHODS: The sample preparation procedure was brief: 100µL of the internal standard (carbamazepine) was added to the 300µL sample. The mixture was vortexed for 30 seconds with 600µL of 7,5% trichloroacetic acid (TCA) in water for protein precipitation. The mixture was centrifuged at 13.000 rpm for 10 minutes. 200µL of supernatant was injected into the LC-MS/MS system. Mass spectrometric analyses were performed using a Shimadzu LC-20-AD (Kyoto,Japan) coupled with an ABSCIEX API 3200 triple quadrupole mass spectrometer (USA) equipped with an electrospray ion source (ESI). The interface was operated in positive ionization mode. RESULTS: The method was linear in the range of 1.1ng/ml and 5000ng/ml. Inter-assay CV value was found to be less than 10.1. The total run time was 5 minutes. CONCLUSIONS: This constituted method is a rapid method with high accuracy and sensitivity and can be used for routine analysis of hydroxyzine dihydrochloride levels. In addition, this study is quite suitable for large-scale studies as it requires a small sample volume and a simple protein precipitation procedure.
**Keywords:** Antihistamine, Hydroxyzine dihydrochloride, LC-MS/MS

**S-098**
**DETECTION OF LEVOCETRIZINE BY TANDEM MASS SPECTROMETRIC METHOD**

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BACKGROUND AND AIM: Levocetirizine dihydrochloride is an antihistaminic drug used in seasonal equipment. Antihistaminic drugs destroy the effect of histamine and eliminate allergy symptoms. Histamine receptor blockers are divided into two groups, H1 and H2. Levocetrizine is in the group of H1 receptor blocker antihistamines. The most common side effects of levocetirizine dihydrochloride are drowsiness, fatigue, fever and weakness. Tandem mass spectrometry is a common technique for the determination of drug levels due to its high sensitivity and specifity. The aim of the study to develop a tandem mass spectrometric method for routine levocetrizine analysis. METHODS: Mass spectrometric analyses were performed using an Shimadzu LC-20-AD (Kyoto, Japan) coupled with a ABSCIEX API 3200 triple quadrupole mass spectrometer (USA) equipped with an electrospray ion source (ESI) operating in positive mode. The sample preparation procedure briefly; 100 µL of the internal standard (carbamazepine) and 600µL of 7,5% trichloroacetic acid (TCA) were added into 300 µL of serum sample added, then vortexed during 30 second. The mixture centrifuged at 2000 × g during 10 minute. Supernatant was injected into the LC–MS-MS system. RESULTS: The linearity range was found 1.1–5000.0 ng/ml and the inter assay coefficient of variation values were lower than 11.3 ng/ml. The total run time was 5 minutes. The mean extraction recovery was 93.8% for 5, 2500 and 5000 ng/ml concentration levels. CONCLUSIONS: A rapid and cost-effective LC-MS/MS method was developed for the detection of levocetirizine.
**Keywords:** Levocetrizine, LC-MS/MS, antihistaminic

**S-099**
**EVALUATION OF THE EFFECT OF PEPTIDE PROFILES OF DIFFERENT α-CHCA MATRIX CONCENTRATION AND COMPOSITION**

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BACKGROUND AND AIM: Matrix assisted laser desorption/ionization (MALDI) is an ionization technique in which laser energy is used to ionize molecules in the presence of a matrix. As a principle, the matrix transfers the analytes to the gas phase by absorbing the laser energy. This process induces ionization and the ions formed in the laser pulses are analyzed in a time-of-flight (TOF) mass analyzer. Alpha-cyano-4-hydroxycinnamic-acid (α-CHCA) is widely used as a matrix for peptide analyzes by MALDI-TOF-MS. Matrix application helps desorption/ionization in further analysis in mass spectrometry. This study aimed to investigate the effect of different α-CHCA matrix concentration and composition on peptide profiles by dried-droplet method using MALDI-TOF-MS. METHODS: Bovine Serum Albumin (BSA) was prepared by dissolving with 0.1% TFA according to the manufacturer's instructions. 5 mg/ml, 7 mg/ml and 10 mg/ml in 3 different concentrations of α-CHCA, 50% and 70% acetonitrile (ACN) and varying trifluoroacetic acid (TFA) (2%, 1%, 0.5%, 0.2% and 0.1%) concentrations. The signal intensities of BSA tryptic peptides added to the matrix at a ratio of 1:1 were compared. Analyzes was performed on RapifleX MALDI Tissue Typer (Bruker Daltonics) mass spectrometer in positive ion reflectron mode over the m/z range of 900 to 3500. RESULTS: When the spectra obtained from different matrix concentrations were evaluated together with histograms, the lowest peptide signal intensities were observed at 10 mg/ml matrix concentration. According to the spectrum, the two peptides with the highest signal intensity (m/z 1479.7 and m/z 1567.7) were selected and the change in different concentrations was examined, and the highest peptide signal intensities were obtained for both peptide peaks at 7 mg/ml matrix concentration. When the ACN concentration in the matrix was increased from 50 to 70%, the intensity of the peptide signals observed in the mass spectrum increased, while the highest signal intensities were observed at 1% TFA concentration. CONCLUSIONS: Matrix concentration and composition are important in the analysis of peptides by MALDI-TOF-MS. In this study, by comparing the signal intensities obtained from different matrix concentrations, it was shown that the matrix composition of 7 mg/ml α-CHCA, 70% ACN, 1% TFA gave the highest peptide signal intensity.
**Keywords:** MALDI-TOF-MS, α-CHCA, Peptide Profiling

**S-100**
**INVESTIGATION OF PROTECTIVE EFFICACY OF A NOS-2 INHIBITOR IN PRILOCAINE-INDUCED HUMAN RETINAL EPITHELIAL CELL TOXICITY**

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BACKGROUND AND AIM: Prilocaine (PRL) is one of the most commonly used local anesthetics for regional anesthesia. Toxic effects of intravitreal administration of local anesthetics on the retina have been reported in vivo. The aim of this study was to examine the protective effects of asperglaucide, a NOS-2 inhibitor, in prilocaine-induced human retinal epithelial cell (RPE) toxicity. METHODS: ARPE-19 cell line was used in our study. Prilocaine (Priloc 2%) was applied at 1,21, 2,43, 4,87 mM concentrations to RPE cell groups. Toxicity analysis (MTT test) was performed to determine the toxic dose and administration time. The protective efficacy of the NOS-2 inhibitor, dissolved in DMSO, was examined at a concentration range of 0.78-3.125 for 12-24 hours. RESULTS: Cell viability was significantly reduced in cells treated with PRL. Treatment of NOS-2 inhibitor following administration of prilocaine significantly increased cell viability compared to administration of PRL alone. Morphological changes such as shrinkage, separation and rounding were observed in cells treated with 2.43 mM PRL for 18 hours. Application of 3.125 µM NOS-2 inhibitor for 12 hours reduced the morphological changes observed in PRL-treated cells. CONCLUSIONS: This study investigated the protective efficacy of asperglaucide, a NOS-2 inhibitor, in RPE cells exposed to PRL toxicity.
**Keywords:** Human retinal pigment epithelial cell, NOS-2 inhibitor, prilocaine,

**S-101**
**ENZALUTAMIDE, AN ANDROGEN RECEPTOR ANTAGONIST, OVERCOMES CHEMORESISTANCE BY SENSITIZING TRIPLE-NEGATIVE BREAST CANCER CELLS TO APOPTOSIS**

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BACKGROUND AND AIM: Triple-negative breast cancer (TNBC) is challenging to treat due to its heterogeneity and lack of therapeutic targets. Hence, systemic chemotherapy is still the mainstay in the treatment. Unfortunately, patients commonly develop chemoresistance. Androgen signaling through its receptor (AR) is an essential player in breast cancer where it has been shown to confer chemoresistance to TNBC cells. Hence, inhibition of the androgen signaling pathway via enzalutamide, for example, provides an intriguing therapeutic strategy. Therefore, we aim to elucidate the mechanistic effects of enzalutamide in sensitizing TNBC cells to doxorubicin. METHODS: The MDA-MB-231 and MDA-MB-453 cells were used as model systems of TNBC. Cell viability and apoptosis were investigated upon treatment of cells with doxorubicin in the absence/presence of dihydrotestosterone (DHT) and enzalutamide. Apoptosis-related genes (*mcl1* and *bcl2*) were assayed by qRT-PCR for the detection of alteration in the gene expression. Caspase 3/7 and TUNEL assays were performed to investigate the molecular mechanism of enzalutamide action. RESULTS: Enzalutamide decreased the viability of MDA-MB-231 and MDA-MB 453 cells and reduced DHT-induced chemoresistance in both cell lines. It also increased the chemosensitivity towards doxorubicin in MDA-MB-231 cells only. Increasing DNA degradation and caspase 3/7 activity were concomitant with these outcomes. Moreover, enzalutamide down- regulated the anti-apoptosis genes, *mcl1* and *bcl2* in MDA-MB-231. DHT, on the other hand, upregulated the expression of the same anti-apoptosis genes in both cell lines. CONCLUSIONS: Enzalutamide is effective in both TNBC cell lines in reducing the DHT-induced chemoresistance by stimulating apoptosis through down-regulation of two anti-apoptosis genes and inducing the activity of the caspase enzymes. These data suggest that enzalutamide may be a potential therapeutic approach for targeting cell-specific TNBC.
**Keywords:** Triple-negative breast cancer, androgen receptor, dihydrotestosterone, enzalutamide, apoptosis

**S-102**
**TUNICAMYCIN INDUCED SPHINGOLIPID AND POLYUNSATURATED FATTY ACID CHANGES IN HUMAN KIDNEY EPITHELIAL CELLS**

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BACKGROUND AND AIM: This study aimed to determine tunicamycin (TM)-related sphingolipid and polyunsaturated fatty acid (PUFA) changes in human kidney cells (HEK-293) and their effects on inflammatory and apoptotic pathways. Tunicamycin was employed to induce endoplasmic reticulum (ER) stress in HEK-293 cells and an ER stress inhibitor, tauroursodeoxycholic acid (TUDCA), was given to minimize cytotoxicity. METHODS: Cell viability was determined by MTT assay. Sphingomyelin (SM), ceramide (CER) and PUFA levels were measured by liquid chromatography-tandem mass spectrometry (LC-MS/MS). Glucose-regulated protein 78-kd (GRP78), cleaved caspase-3 and cyclooxygenase-1 (COX-1) protein levels were assessed by immunofluorescence. Cytosolic phospholipase A2 (cPLA2), total COX and prostaglandin E2 (PGE2) were measured to evaluate changes in enzyme activity. RESULTS: Decreased cell viability was observed in TM treated cells. Administration of TUDCA following TM treatment significantly increased cell viability compared to TM treatment alone. Tunicamycin-induced ER stress was confirmed by significantly increased protein levels of GRP78. A significant increase was observed in C18-C24 CERs and caspase-3 activity, while a significant decrease occurred in sphingosine-1-phosphate (S1P) and cPLA2 activity in cells treated with µg/ml versus controls. The decrease in cPLA2 activity was accompanied by significantly increased PUFA levels in TM treated cells. Tauroursodeoxycholic acid treatment in conjunction with TM significantly decreased ER stress, C18-C24 CERs, caspase 3 activity and increased S1P levels. CONCLUSIONS: Results show the build-up of long chain CERs and PUFAs in HEK-293 cells undergoing ER stress alongside increased apoptotic activity. Tauroursodeoxycholic acid administration, along with TM treatment alleviated the build-up of CERs and TM-induced apoptotic activity in kidney epithelial cells.
**Keywords:** Ceramide, Kidney, PUFA, Sphingolipid, Tunicamycin

**S-103**
**ASSESSMENT OF PROTEOLYTIC DIGESTION PRODUCTS FOR TARGETED PROTEOMICS STUDIES**

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BACKGROUND AND AIM: Targeted proteomics is a powerful tool for hypothesis testing in clinical research. Mass spectrometry (MS) based protein quantification offers high sensitivity, quantitative precision, and repeatability even in complex biological samples. The peptide-centric technique focuses on identifying and/or quantifying precisely the protein's unique peptide(s) using MS in bottom-up proteomics. METHODS: Alpha-2-macroglobulin (A2MG), clinically important protein linked to liver, lung, neurological, and prostate cancer, was selected as a reference protein. Two commonly used proteases, trypsin and a trypsin/lys-c mixture were used to evaluate digestion products. Unique peptides representing A2MG were monitored using triple quadrupole (QQQ) MS operated in multiple reaction monitoring (MRM) mode. RESULTS: Protein-peptide correlation, digestion efficiency, matrix, and concentration-effect were examined using statistical approaches. The preliminary results suggest that the selection of the unique peptide is the most critical step in targeted proteomics as each peptide behaves differently depending on the digestion conditions. CONCLUSIONS: The outcomes of this research will provide insights into peptide-protein relationship for quantitative proteomics.
**Keywords:** mass spectrometry, targeted proteomics, A2MG, peptide-protein relationship

**S-104**
**EVALUATION OF RELAXIN AND SEROTONIN LEVELS IN LABOUR IN WATER AND LABOUR WITH EPIDURAL ANESTHESIA**

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BACKGROUND AND AIM: This study aimed to compare the pain perception by biochemical parameters, relaxin and serotonin, in pregnant women who had labour in water or labour with epidural anesthesia. METHODS: Seventy three pregnant women between the ages of 22-31 were included in the study in three different groups; labour in water (n=23), labour with epidural anesthesia (n=25) and spontanoeus vaginal birth group (control) (n=25). Relaxin and serotonin levels of women were measured after birth in each group. Measurements were made by MRC brand UT6100 ELISA reader using Human RLN1 (Prorelaxin H1) and Human SERT (Serotonin Transporter) ELISA kits (Fine Test/Wuhan Fine Biotech Co., Ltd), respectively. The statistical analysis of the data was made by IBM SPSS version 17.0. RESULTS: There was not any statistically significant difference between groups in terms of age, body mass index, gravidity, parity and neonatal birth weights. Although relaxin levels were not statistically significantly different between groups ($p>0.05$) serotonin levels were statistically significantly different between groups ($p<0.05$).

CONCLUSIONS: The current study revealed that, seratonin which plays a role in the pathophysiology of various painful conditions, may also have value in pain management of labour. Although relaxin levels were also different between groups, the difference did not reach statistical significance. Further studies expanding the scope of the study by using other criteria in the evaluation of pain are needed.
**Keywords:** Water labour, epidural anesthesia, labour, serotonin, relaxin

**S-105**
**INVESTIGATION OF ALTERATIONS IN SERUM NESFATIN-1, ADIPONECTIN AND FIBROBLAST GROWTH FACTOR 21 LEVELS IN CHILDREN DEPENDING ON BODY MASS INDEX**

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BACKGROUND AND AIM: Obesity, which is defined as an excess of body fat, often accompanies insulin resistance, diabetes, metabolic syndrome and cardiovascular diseases, its connection with these diseases at the molecular level has not been fully elucidated. Nesfatin-1, adiponectin and fibroblast growth factor 21 were recently identified as novel peptides that are associated with obesity and play a role in the pathogenesis of insulin resistance in adults.however, their relationship has not yet clarified, and their circulating levels in children with obesity have not been adequately studied. Consequently, the aim of thesis investigate the changes in serum nesfatin-1, adiponectin and fibroblast growth factor 21 levels in children according to body mass indexes, and determine the correlation of children's body mass index and biomarker relationships with each other, insulin resistance and other biochemical parameters according to our results.
METHODS: A total of 133 children, 48 normal weight (Group I), 41 overweight (Group II), and 44obese (Group III), according to body mass indexes, whose age and gender distributions were similar, were included in this study. Anthropometric parameters, clinical and laboratory data of all subjects were collected and circulating levels of nesfatin-1, adiponectin and fibroblast growth factor 21 were measured using the ELISA method.
RESULTS: 62.4% of the subjects were girls, 37.6% were boys, and their mean age was 11.78±1.3 (5-17). According to this, it was observed that the outpatient clinic applications of girls were higher, especially in adolescence. Statistically significant differences were observed in children's age, height, height SD score weight, weight SD score, BMI, FGF21, adiponectin, insulin, glucose, HOMA-IR, triglyceride, total cholesterol, LDL and ALT values according to BMI groups ($p<0,05$). No statistically significant difference was observed in the children's height SD score, nesfatin-1, HDL and AST values according to BMI groups (>0,05).
CONCLUSIONS: In conclusion, the findings show that nesfatin-1, adiponectin and fibroblast growth factor-21 molecules have an important role in obesity-related insulin resistance. According to our study, when our results are supported by future studies, it is possible that the markers we measure can be used in the follow-up of the diagnosis and treatment of obesity and may be a drug target in the future.
**Keywords:** Body mass index, Childhood obesity, Nesfatin-1, Adiponectin, Fibroblast growth factor-21

**S-106**
**DETERMINATION OF GESTATIONAL DIABETES MELLITUS FREQUENCY IN DIFFERENT ETHNIC POPULATIONS**

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BACKGROUND AND AIM: Gestational diabetes mellitus (GDM) is glucose intolerance that occurs during pregnancy or is diagnosed during pregnancy. It has been reported that the frequency of GDM varies between 1-14% in different ethnic populations. In this study, we aimed to determine the frequency of GDM according to the ethnic status of our region in patients admitted to our hospital for GDM screening.
METHODS: A total of 1160 Turkish (Group 1) and 532 Syrian immigrants (Group 2) aged between 18-42 years pregnant (24-28 weeks pregnant) women were included. A two-stage protocol was used for the diagnosis of GDM [50 g and 100 g Oral glucose tolerance test (OGTT)]. For GDM screening glucose measurement was performed with 100 g OGTT for the definitive diagnosis of GDM in women with glucose level ≥ 140 mg/dL at the 1st hour after 50 g OGTT. IBM SPSS program was used for statistical analysis in the study. Numerical data were given as mean ± standard deviation and percentage.
RESULTS: In our study, the mean age of the patients according to the groups was 28.2±5.4 and 26.4±5.4. The proportion of patients with glucose <140 mg/dL after 50 g OGTT in groups was 77.5% (109 ±18 mg/dL) in group I and 82.8% (104 ±21 mg/dL) in group II, the rate of >140 mg/dL was 22.5% (161±19.7 mg/dL) in group I and 17.2% (160.0 ±15.1 mg/dL) in group II. The rates of performing 100 g OGTT for these patients were 90% and 60%, respectively. In this study, the frequency of GDM was determined as 18 (1.6%) for Turkish pregnant women and 12 (2.2%) for Syrian immigrants, according to the results of 50 g OGTT screening. The frequency of GDM among those who had 100 g OGTT was found to be 7.8% for Turkish pregnant women and 21.4% for Syrian immigrants.
CONCLUSIONS: CONCLUSION: In our study, the incidence of GDM was found to be higher in the Syrian immigrant group, according to ethnicity, in pregnant women who applied to our hospital. In addition, it was observed that the incidence of GDM increased with age in both groups.
**Keywords:** Pregnancy, diabetes mellitus, oral glucose tolerance test, ethnicity

**S-107**
**RATIONAL USE OF LABORATORY TEST REQUEST PROCEDURE: GLYCOSYLATED HEMOGLOBIN**

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BACKGROUND AND AIM: Rational Use of Laboratory Rational Test Request Procedure released by Ministry of Health, Republic of Turkey on 06 March 2018 recommends 60-day request interval for glycosylated hemoglobin (HbA1c). In this study we aimed to determine the rate of recurrent testing for glycosylated hemoglobin (HbA1c).
METHODS: Glycosylated hemoglobin (HbA1c) test requests studied in our laboratory between August 2020 and July 2021 were obtained retrospectively from the laboratory information system. Data was evaluated by Microsoft Excel and number of patients, number of studied HbA1c tests, time interval between different test requests on the same patient were calculated.
RESULTS: In our hospital, 33779 HbA1c tests were requested from 30068 patients, 33386 tests were studied, 245 samples were not received to the laboratory and 148 samples were rejected for various reasons because they were not suitable for study in a 12-month period. 801 (2.4%) tests were requested and studied in less than 60 days among 33386 HbA1c tests. According to government payment regulations, HbA1c test requests can be billed quarterly. When this situation was considered 1256 (3.76%) HbA1c tests were requested in less than 90 days.
CONCLUSIONS: Although the Ministry of Health recommends a 60-day testing interval in the procedure for HbA1c, we observed 2.4% of repeat rate. Restrictions on government payment regulations, difficulties in accessing healthcare services for chronic patients during the pandemic period etc. may have caused lower repeat rates for HbA1c.
**Keywords:** Rational Use of Laboratory Test Request Procedure, Appropriate Test Request, Glycosylated Hemoglobin (HbA1c)

**S-108**
**APPLICATION OF PATIENT BASED REAL TIME QUALITY CONTROL (PBRTQC) METHODS FOR GLUCOSE, OPTIMIZATION AND VALIDATION OF APPLIED QUALITY CONTROL METHODS**

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BACKGROUND AND AIM: In our research,it was aimed to determine usability,applicability,optimization and validation of HBGZKK methods as a supplement to traditional internal quality control methods for glucose parameter.It was aimed to determine the most suitable algorithms and rules.
METHODS: All glucose results from a routine biochemistry instrument in Ankara SUAM laboratory between July-December2020 were included in study.Glucose measurement was performed on Roche-Cobas8000 analyzer with enzymatic reference method.Statistical analyzes were performed using Microsoft Excel program.Moving averages (MA) were calculated by calculating mean from consecutive result groups and using exponentially weighted MA (EWMA).Various group sizes,weighting factors, truncation limits were applied to data set.Control limits were set for each combination of truncation limit and calculation procedure.Minimum and maximum MA values were used as starting point for determining lower-upper control limits.Minor adjustments were made to control limits that allowed for maximum one false MA rejection per month.Control limits obtained for each combination of inclusion criteria and calculation algorithm were used for MA optimization and validation studies.Bias in range of -80%to200% were introduced to entire dataset.For comparison,power function graphs were generated by plotting bias studied on x-axis and %of MA alarms per generated MA value on y-axis.To investigate number of results required for MA bias determination,biases in range of -100%to100% were introduced at nine different random time points spread across consecutive outcome datasets.Before introduction of bias,all MA protocols were run for 400 unbiased results,and after introduction of bias,MA result points were calculated over 900 results.Results reported between bias introduction and MA bias detection were counted,including those excluded from MA calculation.
RESULTS: Power function analysis showed that increasing group sizes,use of smaller weighting factors, and more stringent truncation limits improve MA bias detection probabilities per MA result.However,these variables can significantly delay detection of MA bias.Weight factor was0.05,block

size was50,truncation limits were40-180 mg/dl,control limits were88-116 mg/dl in optimal procedure chosen for glucose.This MA protocol allowed for random detection of 20% bias,reproducible detection of 25% bias in 75(min-max;9-176) glucose results(mean daily data 254). CONCLUSIONS: With bias simulation methods,a realistic perspective is provided for MA bias determination features.In this way,optimization has been achieved in determination of rules for application of MA as a continuous quality control method.
**Keywords:** Patient Based Quality Control, Moving Average, Quality Control, Average of Normals

**S-109**
**INVESTIGATION OF THE INTERFERENCE EFFECT OF GLYPHOSATE ON THE MEASUREMENT OF TRIGLYCERIDES IN SERUM BY THE ENZYMATIC METHOD**

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BACKGROUND AND AIM: GPO-PAP method used in the measurement of serum triglyceride concentration; It works with lipase, glycerol kinase, glycerol-3-phosphate oxidase and peroxidase-coupled enzyme system. Glyphosate is an herbicide containing organophosphate group used in agriculture and forest areas. It has been reported that the increasing exposure to glyphosate in the world may cause undesirable toxic effects. In this study, the interference effect of glyphosate on enzymatic triglyceride measurements was investigated. METHODS: In this study the effect of glyphosate on the GPO-PAP-coupled enzyme system used in triglyceride measurement was investigated. End-point measurement was taken with the GPO-PAP method. The amount of quinonimine formed and the quantity of triglyceride in the sample were measured in direct proportion at 500 nm. The triglyceride concentration of each experimental step was calculated. RESULTS: Up to 80% negative interference effect was observed in repeated triglyceride measurements using 0.01;0.05 and 0.1 M glyphosate at different (24,48,96,144,192 mg/dL) triglyceride concentrations. Similar effects were also observed in serum triglyceride measurements. CONCLUSIONS: The use of glyphosate has been increasing in recent years, in Turkey and in the world. In addition, due to the chelator effect of metalloenzymes containing minerals such as Mg, Ca, Cu, Co, Zn and Mn, it may cause interference in the measurements and lead to incorrect test results. Since the glycerol kinase enzyme is Mg metalloenzyme in the method we used, it was thought that glyphosate might cause negative interference over Mg. In the clinic, possible glyphosate exposure should be considered in triglyceride analyzes with this method.
**Keywords:** Glyphosate, Triglyceride, Interference, Enzymatic Measurement

**S-110**
**THE IMPORTANCE OF CALCULATED LIPID PARAMETERS IN CORONARY ARTERY DISEASE: A PRELIMINARY STUDY**

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BACKGROUND AND AIM: Cardiovascular diseases due to atherosclerosis are among the leading causes of death in the world. It is known that increased cholesterol levels have harmful effects on the cardiovascular system. In this study, the relationship between vascular occlusion reported in the first coronary angiography (CAG) of patients without a history of coronary artery disease and lipid parameters calculated with different formulas was investigated. METHODS: The CAG results of 183 patients aged 25-69 years who underwent coronary angiography between 2018 and 2021 in our hospital and the lipid parameters studied on the same day were compared. The patients were divided into two groups according to the angio report as having complete coronary artery occlusion (Group 1) and without (Group 2). Total cholesterol (TC), HDL-cholesterol (HDL-C) and triglyceride (TG) values studied on the Roche Cobas 8000 analyzer on the same day of angiography, with Sampson formula (SLDL-C) and in patients with TG <400 mg/dL, with Friedewald formula (FLDL-C) LDL-Cholesterol levels with [(SLDL-C=TC/0.948)-(HDL-C/0.971)-((TG/8.56)+(TGxNon-HDL C)/2140)-((TG)² /16100 ))-9.44 ) and FLDL-C= TC- (HDL C+TG/5) ] remnant cholesterol (TC-(HDL-C+LDL C)) and Non-HDL cholesterol (TC – (HDL-C)) levels were calculated. Statistical calculations were performed with SPSS ver24. RESULTS: Vascular occlusion was reported in 108 (59%) of 183 patients (Female: 51, Male: 132) who underwent CAG. Complete vascular occlusion was not detected in 75 patients (41%), and it was decided to follow up with medical treatment. Between Group 1 and Group 2, SLDL-C (median=111.6 and IQR=42, p=0.003), FLDL-C (median=108.6 and IQR=47, p=0.01), a significant difference was found for Non-HDL C (median=143, IQR=58, p=0.031). There was no significant difference between Group 1 and Group 2 in terms of remnant cholesterol levels (p=0.74). In terms of diagnosis, SLDL-C, FLDL-C and Non-HDL C were evaluated with the ROC curve. Areas under the curve were 0.635 in SLDL-C and 0.672 in FLDL-C and 0.594 in Non-HDL C. CONCLUSIONS: LDL cholesterol calculated by the Friedwald and Sampson formula and Non-HDL cholesterol levels can be an indicator of the severity and extent of vascular occlusion in patients with coronary artery disease.
**Keywords:** Coronary Artery Disease, Lipid Parameters, Sampson

**S-111**
**ROLE OF INFLAMMATORY BIOMARKERS IN NEPHROPATHY AND ATHEROSCLEROSIS IN TYPE 2 DIABETES MELLITUS PATIENTS WITH MICROALBUMINURIA**

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BACKGROUND AND AIM: Type 2 Diabetes Mellitus (Type 2DM) is a common chronic disease in the world. Microalbuminuria (MAU) which is due to endothelial damage in Type 2DM leads to progressive diabetic nephropathy (DN). These two are the most important microvascular complications of the disease. The aim of this study was to investigate the relationship between serum inflammation biomarkers (Monocyte Chemoattractant ProteinMCP1), Interleukin6 (Interleukin6IL6), Interleukin10 (Interleukin10IL10), Tumor Necrosis Factor (TNFα), High Sensitive CReactive Protein (HsCRP) and DN and atherosclerosis. METHODS: The levels of inflammatory biomarkers were detected by Multipex Assay method in patients with Type2DM (MAU (+) n=40; MAU (-) n=40). Ankle Brachial Index (ABI) which is an indicator of atherosclerosis was also determined along with routine cardiometabolic markers. Student t Test and Pearson test was used for statistics. RESULTS: No significant difference was found in the levels of inflammatory biomarkers between the 2 groups (MAU (+), MAU (-)). Similarly, in both groups, ABI values were within the normal range of 0.91.3 and thus no significant difference between the groups. A moderate or strong correlation was detected between inflammatory biomarkers IL6, IL10, MCP1 and TNFα and cardiometabolic markers Tkol, TG and LDL in patients with MAU (+). Cardiometabolic markers increased significantly parallel to the inflammatory biomarkers' increase. However, no significant relationship was found between ABI, the determining factor in atherosclerosis, in patients with MAU (+), and inflammatory biomarkers and cardiometabolic markers. CONCLUSIONS: As a result, MAU, ABI and inflammatory markers in patients with Type 2DM have been investigated together for the first time. New studies with large cohorts, MAU subgroups, or prospective designs may lead to a better understanding of the relationship between DN and atherosclerosis.
**Keywords:** Type 2 Diabetes Mellitus, Microalbuminuria, Atherosclerosis, Diabetic Nephropathy, Ankle Brachial Index, Cytokines

**S-112**
**SERUM AND TISSUE LEVELS OF ANGIOGENESIS-RELATED NITRIC OXIDE, ENDOTHELIAL NITRIC OXIDE SYNTHASE AND ENDOTHELIN-1 IN DIFFUSE INFILTRATIVE GLIAL TUMORS**

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BACKGROUND AND AIM: Gliomas are tumors that showing diffuse growth and known for their high angiogenic activity. In angiogenesis, VEGF increases vascular permeability, basement membrane and matrix destruction by inducing nitric oxide (NO) synthesis due to increased regulation of endothelial nitric oxide synthase (e-NOS) enzyme. Inhibition of e-NOS has been reported to reduce neovascularization. Endothelin-1 (ET-1) is thought to trigger angiogenesis by stimulating endothelial cell proliferation and migration. In a study, it was shown that ET-1 expression increased in tumor tissue compared to healthy tissue. The objective of current study was to evaluate the effect of serum and tissue levels of angiogenesis-related NO, e-NOS and ET 1. METHODS: In the present study, serum and tissue NO, e-NOS and ET-1 levels of 96 glioma patients and 104 healthy controls, matched for age 49.09±1.33, 48.60±1.34, respectively, were measured by ELISA method using commercial kits. RESULTS: Serum NO and e-NOS ($p<0.01$, $p<0.01$) and tissue NO, e-NOS and ET-1 levels ($p<0.01$, $p<0.01$ and $p<0.05$, respectively) were significantly higher in glial tumor group compared to controls. Although serum ET-1 level of the glioma group was also higher than control group, no significant difference was found ($p>0.05$). CONCLUSIONS: In conclusion, serum and tissue NO, e-NOS and ET-1 levels were significantly increased in patients with glial tumors compared to healthy controls in our study. High gliomegenesis activity is thought to be due to increases in NO, e-NOS and ET-1 levels. With new studies to support

these findings, it is foreseen that measured parameters will be the potential drug targets in angiogenesis-related treatment strategies of glial tumors.
Keywords: Glioma, angiogenesis, NO, e-NOS, ET-1.
This study supported by the Scientific and Technological Research Council of Turkey (TUBITAK) (Project No: 216S995).
**Keywords:** Glioma, angiogenesis, NO, e-NOS, ET-1.

**S-113**
**IN VITRO AND IN SILICO INVESTIGATIONS FOR THE ANTICHOLINESTERASE EFFECTS OF SOME IMIDAZOLE DERIVATIVES**

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BACKGROUND AND AIM: Alzheimer's disease (AD) is a neurodegenerative disorder seen among elderly people characterized by progressive mental damage, dementia, and memory loss. The pathophysiology of AD is related to neurotransmitter deficiency. Cholinesterases hydrolyze cholinergic neurotransmitters. Thus, cholinesterase inhibition is one of the crucial treatment approaches for AD. In this work, we aimed to investigate anticholinesterases effects of 20 imidazole derivatives using in vitro an in silico methods. METHODS: The inhibitory effects of the compounds (1-20) on acetylcholinesterase (AChE) and butyrylcholinesterase (BuChE) were investigated using spectrophotometric methods. Galantamine was used as a positive control. Cytotoxic properties of the compounds were tested against murine fibroblast (T3T) cell line using MTT assay. Molecular docking was performed using Glide (2021-2, Schrodinger LLC, New York, NY) at extra precision mode. RESULTS: Among tested compounds, 20 showed the best inhibitory effect on AChE with an IC50 value of 9.90 ± 2.70 µM. Also, Compound 20 was more potent than galantamine (35.40 ± 0.33 µM, $p < 0.001$). Compound 7 was the most potent inhibitor against BuChE with an IC50 value of 4.17 ± 0.46 µM. The compounds did not have significant toxic effects on murine fibroblasts at their active concentrations. Molecular docking predicted high affinity binding for the compounds to the cholinesterase enzymes, as well as interactions with mainly peripheric anionic site, acyl- and choline-binding pockets of the enzyme active sites. CONCLUSIONS: These results show that imidazole derivatives are promising in terms of anti-AD drug design. Further studies are needed to clarify the therapeutic potential of the compounds for AD.
**Keywords:** Alzheimer's disease, cytotoxicity, imidazole, molecular docking, neurodegenerative.

**S-114**
**EVALUATION OF THE EFFECT OF CLOMYPHEN CITRATE APPLICATION ON TWO-DIMENSIONAL AND THREE-DIMENSIONAL SPHEROID MODEL MCF-7 BREAST CANCER CELLS**

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BACKGROUND AND AIM: Breast cancer is the most common malignancy among women. Clomiphene citrate is a drug used for induction of ovulation in the treatment of polycystic ovary and infertility. In this study, it is aimed to determine the effect of clomiphene citrate treatment on two-dimensional (2D) and three-dimensional (3D) spheroid model MCF-7 breast cancer cells on invasion. METHODS: After the two-dimensional and three-dimensional spheroid model MCF-7 breast cancer cells were developed under laboratory conditions, these cells was treated with clomiphene citrate. The viability of two-dimensional MCF-7 breast cancer cells were evaluated by cytotoxicity test. Three-dimensional spheroid MCF-7 breast cancer cells were developed by the hanging drop method. The effects of clomiphene citrate treatment on MCF-7 breast cancer cells on invasion was determined. RESULTS: Two-dimensional MCF-7 breast cancer cells were treated with the IC50 dose determined by XTT test of clomiphene citrate. It was observed that the treatment of clomiphene citrate suppressed the motility feature of MCF-7 breast cancer cells. In addition, it was determined that 48 hours of clomiphene citrate treatment suppressed invasion of MCF-7 breast cancer cells. CONCLUSIONS: It is thought that the treatment of clomiphene citrate may slow down the spread of MCF-7 breast cancer cells by suppressing invasion of these cells. The literature on this subject is limited and more research is needed.
**Keywords:** Clomiphene citrate, Three-dimensional spheroid model breast cancer, Cytotoxicity, Two-dimensional breast cancer, Invasion

**S-116**
**TINY TROJAN HORSES: SYNTHESIS, CYTOTOXICITY, AND BIOAVAILABILITY OF SILVER NANOPARTICLES**

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BACKGROUND AND AIM: Size of the AgNPs is the main factor for their biological applications.This study aims to investigate the molecular mechanisms of four(4) different sizes of AgNPs on human colorectal carcinoma (hCRC). METHODS: Cytotoxic properties of AgNPs were tested on different hCRC cells. Cell migration and colony formation properties of the cells were investigated via wound-healing and soft-agar assays. Apoptotic properties of AgNPs were showed using a Flow cytometer. Alteration in mRNA and proteins expressions was also demonstrated with qRT-PCR and western blot analyses. The bioavailability of AgNPs in rat tissues was clarified using ICP-MS. RESULTS: AgNPs of different sizes(5 nm,10 nm,40 nm, and 100 nm) were synthesized and characterized. 100 nm AgNPs showed the highest cytotoxicity in all hCRC cells, and the lowest IC50 value was calculated in DLD-1 cells as 5.26 µg/mL while it was 308 µg/mL against CCD-18Co cells. In addition, 100 nm AgNPs triggered the DLD-1 cells %50 more early apoptosis ($p<0.0001$). Besides, it decreased cell migration by 73% and colony formation by 95%. 100 nm AgNPs treatment significantly modulated the mRNA and protein expressions and altered different cell signaling pathways. 100 nm AgNPs mainly located in the lung(422.8 ppm), liver(245.6 ppm), colon(119.2 ppm) in 24 h. The AgNP concentration in colon tissue was increased up to 488.2 ppm and decreased 225.3 ppm in lung tissues. CONCLUSIONS: Size is one of the critical patterns for AgNPs cytotoxicity and bioavailability in hCRC. This tiny trojan horse settles in the cell's cytoplasm and inhibits cell viability.
**Keywords:** AgNPs, Colorectal Carcinoma, ICP-MS, Cytotoxicity, Bioavailability

**S-117**
**INVESTIGATION OF GLYCOSYLATION PATTERNS OF MUTANT AVP PRECURSORS**

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BACKGROUND AND AIM: Protein aggregates occur when misfolded proteins accumulation inside or outside the cell. Autosomal dominant neurohypophysial diabetes insipidus (ADNDI), a rare disease, caused by mutation in precursor protein arginine vasopressin hormone (AVP). Glycosylation is a part of the protein maturation stages and crucial to understand and interpret the path followed by synthesized precursor proteins. This study aimed to investigate glycosylation patterns in post-translational modifications of G45C, 207_209delGGC, G88V, C98X, C104F, E108D and R122H mutations in the neurophysin II region of the AVP gene. METHODS: Endo H (endoglycosidase H) and PNGase F (peptide N-glycosidase F) enzymes are used to examine the glycosylation status of a protein. Mutations were created with the in-fusion snap assembly cloning kit on the HA labeled plasmid containing the wild-type AVP gene using the site-directed mutagenesis method. Mutations were confirmed by DNA sequencing. Mutations were transfected with COS-1 cells. Cells were checked 2 days after transfection and the cells were lysed with lysis buffer for protein isolation. Protein samples were separately digested with Endo H and PNGase F enzymes. Samples were treated with Anti-HA antibody and analyzed by western blotting (TUBITAK SGAB Project No:118S688). RESULTS: It was determined that the high mannose structures of mutant AVP precursors were removed after digested with EndoH. No difference was observed after PNGase F cleavage, as pre-pro-AVP state precursors didn't carry the complex glycan structure. CONCLUSIONS: Data obtained from studies on disease-causing mutations will enable to understand common, structural and pathogenic features of diseases associated with protein accumulation and conduct new studies involving therapeutic approaches.
**Keywords:** Aggregate, AVP, Glycosylation, Neurohypophyseal diabetes insipidus

**S-118**
**INVESTIGATION OF THE RELATIONSHIP BETWEEN ASIC3 GENE POLYMORPHISM AND FIBROMYALGIA SYNDROME**

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BACKGROUND AND AIM: Fibromyalgia syndrome (FMS) is a long-term widespread body pain and defined chronic pain syndrome. ASIC3 ion channels activate muscle pain receptors and cause chronic muscle pain. In this study, it was aimed to examine the relationship between ASIC3 polymorphism and FMS in the Turkish population. METHODS: Polymorphism in the ASIC3 gene (rs4148855 and rs2288646) was determined by Real-Time PCR method in 175 patients with fibromyalgia and 176 healthy controls. The results were evaluated using logistic regression and Chi-square test ($\chi 2$). RESULTS: When the patients and controls with fibromyalgia syndrome were evaluated by logistic regression analysis in terms of sleep disturbance, fatigue, headache, morning fatigue, dry eye, dry mouth, leg numbness, difficulty in concentration, feeling of soft tissues and family history of fibromyalgia, a statistically significant difference was found. relationship was found ($p < 0.05$). In fibromyalgia patients, ASIC3 polymorphism (rs4148855 and rs2288646) and these symptoms were evaluated statistically by $\chi 2$ method, but no significant difference was found between genotypes ($p > 0.05$). CONCLUSIONS: There was no significant relationship between ASIC3 (rs4148855 and rs2288646) polymorphism and Fibromyalgia syndrome in Turkish population ($p > 0.05$).
**Keywords:** Fibromyalgia Seyndrome, Polymorphism, ASIC3, Turkish population

**S-119**
**DETERMINATION OF EXPORTIN5 (XPO5) GENE POLYMORPHISM IN COLON CANCER PATIENTS**

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BACKGROUND AND AIM: In this study, it was aimed to investigate polymorphism of XPO5 gene (rs11544382) in colon cancer patients. METHODS: Polymorphism in the XPO5 gene (rs11544382) was determined by Real-Time PCR method in 120 individuals (60 colon cancer patients; 60 healthy controls). The results were evaluated using logistic regression and Chi-square ($\chi 2$) test. RESULTS: The comparison of colon cancer patients and controls revealed a statistically significant relationship for alcoholic beverage consumption and smoking ($p<0.05$). The relationship between XPO5 gene (rs11544382) polymorphism and colon cancer was statistically not significant. There was no a statistically significant relationship between mutant (GG) genotype with both wild type (AA) and heterozygous (AG). Polymorphic genotypes when evaluated in XPO5 polymorphism colon cancer patients and control groups ($\chi 2$: 2.07, p:0.151). The heterozygous (AG) was dominant in colon cancers and control subjects, 86,7 and 91.7 % respectively. CONCLUSIONS: In this study, it was found that the AG genotype is predominant in colon cancer patients and controls.
**Keywords:** XPO5 gene, colon cancer, polymorphism, rs11544382

**S-120**
**GENETIC HETEROGENITY OF HEMOGLOBIN H DISEASE IN CUKUROVA REGION**

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BACKGROUND AND AIM: Hemoglobin H (HbH) Disease is a clinically very variable group of diseases that cause moderate to severe hemolytic anemia. Some patients do not need transfusion at all, while others may require intermittent or even regular transfusions. The most common cause of Hb H disease is the deletion of the 3 alpha globin gene (-α/--). Others are 2 gene deletions and a point mutation (αTα/--) (ααT/--) in the α1 or α2 gene, or homozygous point mutations (αTα/ αTα), particularly in the α2 gene. In Hb H disease, 20-40% Hb Bart's is observed in newborns, then it is replaced by 5-30% Hb H. Hb Bart's hydrops fetalis, the most severe form of alpha thalassemia, develops when α-globin cannot be synthesized as a result of deletion or inactivity of all four α-globin alleles. Genetic counseling to parents who are carriers of alpha thalassemia is mandatory in Hb H disease due to its clinical diversity. In this study, it was aimed to determine the genetic diversity of Hemoglobin H Disease in Cukurova Region. METHODS: DNA was isolated from blood samples that applied to Cukurova University Balcali Hospital and had severe anemia as a result of blood count (Hb<9, MCV<70). HbH and HbA2 values were measured by hemoglobin electrophoresis. Gene deletion/point mutations were determined by multiplex PCR and ARMS methods. RESULTS: In the study, 17 patients (-α3.7/--20.5), 14 patients (--Med I/-α3.7), 7 patients (α5ntα/α5ntα), 4 patients (αPolyAα/αPolyAα), 1 patient (-α5nt/--20.5) were found. CONCLUSIONS: Hemoglobin H disease is a diorders that can occur as a result of the marriage of mild and severe alpha thalassemia carriers. In the study, it was determined that patients with Hemoglobin H disease (α3.7/--20.5) were most common in Cukurova region.
**Keywords:** HbH, Alpha Thalassemia, Hb Bart's

**S-121**
**CRISPR-CAS9 MEDIATED KNOCKOUT OF MIR-27A REVEALS ITS ESSENTIAL ROLES IN INSULIN SIGNALING PATHWAY**

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BACKGROUND AND AIM: MicroRNAs (miRNAs) are the essential regulators of gene expression, translation and/or mRNA degradation. Insulin exerts its effects on the target tissues through the insulin signaling pathway, dysregulation of which leads to insulin resistance. Recent studies demonstrate some miRNA molecules could be effective in releasing insulin and regulating the sensitivity of target tissues. This study is designed to uncover the potential miRNAs regulating insulin signaling and evaluate the detailed functional interactions between miR-27a that is predicted to target insulin signaling with canonical pathway elements. METHODS: Herein, two different gRNAs were designed for miRNA-27a genomic location and transfected to the rat hepatic cells (Clone9) with the CRISPR-Cas9 system either alone or in combination by using lipofectamine. After 48-h incubation, our designed gRNAs produced point mutations in the target regions of miR-27a that were also validated by the T71 endonuclease mutation detection assay. RESULTS: Mutations repressed the miRNA-27a at least 5-fold that was validated with qRT-PCR. Besides significant down-regulation of insulin signaling pathway elements, ir-β, irs1, irs2, pi3k, akt, gsk3a, and gsk3b were also detected at both transcriptional and translational levels in CRISPR-Cas9 mediated mutant cell lines. CONCLUSIONS: These results demonstrated that miR-27a is an important regulator of the insulin signaling pathway and that miRNA mimicry agents can reverse insulin resistance in cells or tissues.
**Keywords:** CRISPR-Cas9, insulin signaling, gRNA, miR-27a

**S-122**
**OXIDATIVE STRESS AND INFLAMMATION IN ANKYLOSING SPONDYLITIS PATIENTS**

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BACKGROUND AND AIM: Ankylosing Spondylitis (AS) disease is a condition of unknown etiology, showing systemic findings and severe inflammatory process in which the serum levels of inflammatory cytokines and oxidative stress increase during the diseases. The aim of our research was to examine the levels of oxidative stress and inflammatory biomarkers' relationship with diseases severity in newly diagnosed AS patients. METHODS: 100 AS patients (65 women&35 men – by power analysis and at least 100 volunteers for each group were calculated to achieve 80% power at α=0.05 significance level) were not start treatment, who applied to the Bezmialem Vakif University Physical Medicine and Rehabilitation Clinics in 2019-2020, and 100 healthy individuals with the same demographic characteristics without any chronic diseases as the control group were included in the study. Serum presepsin, raftlin, Interleukin 1β, Interleukin-6, Interleukin-10, TNFα levels in

study participants were determined by ELISA kits, Thiol-disulfide homeostasis, Total Antioxidant Status (TAS), Total Oxidant Status (TOS), Myeloperoxidase, Paraoxonase, and Arylesterase levels were measured by photometric methods. RESULTS: When the AS group and the control group were compared, TAS($p<0.001$), total($p<0.01$), and native thiol($p<0.01$) levels were found to be statistically significantly lower in the patient group ($p<0.001$). TOS($p<0.001$), oxidative stress index($p<0.001$), disulfide levels($p<0.05$), and interleukin 1β($p<0.001$), interleukin-6($p<0.001$), interleukin-10($p<0.01$), TNFα($p<0.001$), myeloperoxidase($p<0.001$), paraoxonase($p<0.01$), and arylesterase($p<0.01$) levels were found to be statistically significant higher ($p<0.001$). CONCLUSIONS: According to the findings, it was found that inflammation, which plays an important role in the pathogenesis of the disease, also induces oxidative stress, and oxidative stress and inflammation are increased as correlation with the severity of the disease. Therefore, we think that oxidative stress parameters should be evaluated together with inflammatory biomarkers to monitor AS patients.
**Keywords:** Ankylosing Spondylitis, Inflammation, Oxidative Stress, Thiol-Disulfide Homeostasis

## S-123
## THE ROLE OF OXIDATIVE STRESS, ANTIOXIDANT LEVEL AND CELLULAR IMMUNITY IN INDIVIDUALS WITH HASHIMOTO'S THYROIDITIS

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BACKGROUND AND AIM: Hashimoto's thyroiditis is the most common autoimmune thyroid disease and poses a serious health threat with increasing prevalence percentages. Characterized by diffuse lymphocytic infiltration of the thyroid gland, elevated levels of anti-thyroid antibodies or atrophic gland, and frequent thyroid dysfunction in varying degrees. It has been shown that oxidative stress causes many local and systemic diseases to occur, progress and complications in the organism. Oxidative stress can lead to the formation of new autoantigens and thereby exacerbation of the autoimmune response. Besides cytokines, neopterin is a non-specific biochemical marker of the evoked cellular immune response. Measuring neopterin serum values in vivo cellular immunity gives an idea about the degree of activation. In our study, we investigated the total antioxidant capacity (TAC), total oxidant status (TOS), oxidative stress index (OSI) and neopterin parameters in patients with Hashimoto thyroiditis (n:30) and healthy individuals (n:30). METHODS: TAC and TOS levels were measured spectroscopically in serum. The level of neopterin was determined by high-performance liquid chromatography (HPLC). RESULTS: Oxidative stress markers (TAC, TOS, OSI) were found to be significantly higher in individuals with Hashimoto's thyroiditis compared to the healthy control group ($p<0.05$). There was a significant difference in neopterin levels between the healthy control group and the group with Hashimoto's thyroiditis ($p<0.05$). CONCLUSIONS: It is thought that neopterin, a crucial biomarker of immune activation, and changes in oxidative stress markers may play a role in the diagnosis and treatment processes of Hashimoto's disease.
**Keywords:** Hashimoto's thyroiditis, oxidative stress, cellular immunity

## S-124
## ANTIOXIDANT AND ANTIBACTERIAL POTENTIALS OF NEW ARIL SULFONYL HYDRAZONE DERIVATIVES

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BACKGROUND AND AIM: The sulfonyl hydrazones skeleton is an important chemical used in drug chemistry. It has a significant bioactive potential such as antioxidant, antidepressant, anticholinesterase, anticonvulsant, antimicrobial, anticancer, analgesic, antiflammatory. The synthesis and characterization of new aryl sulfonyl hydrazones derived from 4-fluorobenzulfonyl hydrazide have been revealed by previous studies. However, 9 new aryl sulfonyl hydrazones were obtained. METHODS: The aim of our study was to determine the antioxidant and antibacterial activities of 9 new aryl sulfonyl hydrazone derivatives under in vitro conditions. Staphylococcous aureus (ATCC-29213), Escherichia coli (ATCC-25922) Pseudomonas aeruginosa (ATCC-27853), Klepsiella pneumoniae (ATCC-700603) standard strains were used for antibacterial activity analysis. Antibacterial activity was determined by disk diffusion method. Antioxidant activity was studied using Rel Assay diagnostic kit.Measurements were made with Multiskan GO UV/Vis Spectrophotometer device. Total Antioxidant Status (TAS) value was calculated as mmol vitamin E analogue Troloks equive./L and trolox was used as calibrator. Absorbance measurements were made at 660 nm wavelength for sample measurements. Total Oxidant Status (TOS) ) value was calculated as μmol H2O2 and hydrogen peroxide was used as calibrator. Sample measurements were measured at 530 nm wavelength. RESULTS: As a result, it was determined that 9 new aryl sulfonyl hydrazone derivatives did not have antibacterial activity against Staphylococcus aureus. It was determined that 20ug/ul concentration of aryl sulfonyl hydrazone derivative (1) was effective against E. coli, P. aeruginosa and K. pneumoniae. According to antioxidant result, 40 ug/ul of compounds of derivatives (1,3,4,5,7 and 10); 2.5 ug/ul of compound (8); 5 ug/ul of compound (9), 10 ug/ul of compound (6) concentrations (>2.0 mm Trolox Equiv/L) were found to have very good antioxidant activity. CONCLUSIONS: 9 new aryl sulfonyl hydrazones derived from 4-fluorobenzenesulfonyl hydrazides differed in their antioxidant and antibacterial activities. In general, it has been determined that all of them are compounds with antioxidant potential. However, some were found to have higher antioxidant potential at much lower concentrations. Among the compounds, only compound no. 1 showed antibacterial activity, while the others did not have antibacterial potential.
**Keywords:** Antioxidant, antibacterial, sulfonyl hydrazones,

## S-125
## THE EFFECT OF ANTI-TNF ALPHA THERAPY ON OXIDATIVE STRESS PARAMETERS IN ANKYLOSING SPONDYLITIS PATIENTS

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BACKGROUND AND AIM: Oxidative stress occurs as a result of imbalance due to increased production of reactive oxygen species (ROS) and/or decreased antioxidant defense capacity of the body. Systemic inflammation commonly seen in patients with ankylosing spondylitis (AS) causes an increase in oxidative stress in these patients. In our study, we aimed to examine the effect of anti-TNF alpha treatment on inflammatory and oxidative stress parameters in AS patients. METHODS: Our study included 38 patients who received anti-TNF therapy (Group 1), 38 patients who received conventional non-anti-TNF therapy (Group 2), and 32 healthy volunteers (Group 3). The ESR level of the volunteers was measured in mm/hour using whole blood samples taken into K2-EDTA tubes in the Starrsed Interliner device with the modified Westergren method. CRP levels were measured from serum samples of volunteers by immunoturbidimetric method in Beckman Coulter AU5800 autoanalyzer. Thiol-disulfide hemostasis parameters were evaluated using the fully automated method specified by Ozcan Erel and Salim Neselioglu. Total oxidant status (TOS) and total antioxidant status (TAS) were evaluated using the fully automated method specified by Ozcan Erel. Native thiol (μmol/L), total thiol (μmol/L), TOS (μmol H2O2 Eq/L) and TAS (mmol Trolox Eq/L) levels were measured on a Beckman Coulter AU480 autoanalyzer using commercial kits (Rel Assay Diagnostics, Turkey). Oxidative stress index (OSI) was calculated as arbitrary unit using the formula TOS (μmol H2O2 Eq/L) / (TAS (mmol Trolox Eq/L) x 10). Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and Bath Ankylosing Spondylitis Functional Index (BASFI) scores were calculated to evaluate disease activity in the patient group. RESULTS: There was no significant difference between Group 1, Group 2 and Group 3 in terms of gender (14 female and 24 male in group 1, 18 female and 20 male in group 2, and 14 female and 18 male in group 3) and mean±SD age (39,76±6,33, 41,97±5,49, 39,38±7,15, respectively) ($p>0.05$). There was no statistically significant difference between all groups in terms of thiol-disulfide homeostasis parameter levels ($p>0.05$). ESR and CRP levels of Group 1 and Group 2 were significantly higher than Group 3. Median (25-75%) level of ESR was 14 (13-17) in group 1, 28 (27-32) in group 2 and 6 (2-9) in group 3. Median (25-75%) level of CRP was in 4 (3-6) in group 1, 10.5 (9-13) in group 2, and 1.10 (0.54-3.13) in group 3 ($p<0,05$). BASDAI score, BASFI score, ESR and CRP levels of Group 1 were statistically significantly lower than Group 2. Median (25-75%) BASFI score was 3.65 (3.2-4.0) in group 1 and 6.15 (5.5-6.5) in group 2, while mean±SD BASDAI score was 3.35±0.57 in group 1 and 5.91±0.87 in group 2 ($p<0,05$). TOS and OSI levels of Group 1 and Group 2 were statistically significantly higher than Group 3. Median (25-75%) TOS level was 11.56 (9.71-14.24) in group 1, 11.22 (9.19-12.96) in group 2, and 8.56 (7.40-10.12) in group 3 while median (25-75%) OSI level was 0.71 (0.63-0.94) in group 1, 0.73 (0.62-0.87) in group 2, and 0.55 (0.48-0.68) in group 3 ($p<0,05$). CONCLUSIONS: Our results show that AS patients are faced with increased oxidative stress. Although there was a statistical difference between the patient groups in terms of inflammatory parameters, no significant difference was found in terms of oxidative stress parameters. We believe that further studies on the pathophysiology of oxidative stress in AS patients are needed.
**Keywords:** Ankylosing Spondylitis, Anti-TNF Alpha, Oxidative Stress

**S-126**
**THE EFFECT OF VITAMIN E ON ISCHEMIA-REPERFUSION INJURY IN THE RAT KIDNEY**

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BACKGROUND AND AIM: Free radicals cause pathophysiological tissue changes during ischemia reperfusion. In this study, we aimed the effects of vitamin E (Vit-E) in experimental left renal ischemia-reperfusion injury in rats biochemically. METHODS: We used 40 male Wistar albino rat in this research.The animals were randomly divided into 4 groups. Each experimental group was consisted of ten animals. Control Group (C):They were fed with only standard rat diet and tap water.Any drug injections or ischemia reperfusion was not performed to animals.Vitamin E Group (Vit-E-25):25 mg/kg Vit-E was administered intraperitoneally 30 min prior to ischemia and immediately before the reperfusion period. Ischemia/Reperfusion Group (I/R):Rats were subjected to 45 min of renal pedicle occlusion followed by 24 hours reperfusion. Vit-E+Ishemia/ Reperfusion Group (Vit-E+I/R): 25 mg/kg Vit-E was administered 30 min prior to ischemia and immediately before the reperfusion period.Rats were subjected to 45 min of renal pedicle occlusion followed by 24 hours reperfusion. RESULTS: MDA levels found to be significantly increased in I/R group ($p<0.05$). MDA levels were found to be significantly decreased in I/R+VitE group compared with control group ($p<0.05$) but increased in I/R group compared with Vit-E+I/R. SOD and GST activities were found to be significantly decreased in I/R group ($p<0.05$) but SOD and GST activities were similar to control group. CONCLUSIONS: These results show that treatment with Vit-E may prevent the kidney damages due to ischaemia result in increasing oxidant stres peroxidation damages further.
**Keywords:** VitE, ischemia, reperfusion

**S-127**
**INVESTIGATION OF 8-ISOPROSTAGLANDIN AND RAFTLIN LEVELS IN SEMINAL FLUID SAMPLES OF FERTILE AND INFERTILE CASES**

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BACKGROUND AND AIM: Oxygen is necessary to sustain life but reactive oxygen species (ROS) can alter cell functions and compromise cell survival. Spermatozoa are particularly vulnerable to damage from oxidative stress. 8-isoprostaglandin is the indicator of oxidative stress. Raftlin, on the other hand, is known as lipid racks and is found in cell membranes. In this study, which was conducted for the first time, we aimed to examine the levels of 8-isoprostaglandin and raftlin in seminal fluid samples of fertile and infertile men. METHODS: In our study, semen samples of patients who applied to KSU Medical Faculty Hospital with infertility problem between April 2020 and June 2021 were used after obtaining the consent of the cases. Sperm analysis evaluation was made according to the criteria of the World Health Organization Laboratory Manual (2010). Cases were grouped only on the basis of spermiogram concentration, motility and morphology. Group 1 (n=40)-control group, normospermia; Group 2 (n=25)-oligoteratospermia; Group 3 (n=25)-teratospermia; Group 4 (n=15)- asthenospermia; Group 5 (n=15)-azoospermic. Experiments were performed in seminal fluid homogenates and 8-isoprostaglandin and Raftlin levels were measured with ELISA commercial kits. RESULTS: 8-isoprostaglandin and raftlin levels showed statistically significant differences between the groups ($p<0.05$). The highest levels of 8-isoprostaglandin and raftlin were observed in Group 4 ($p<0.05$), while the lowest levels were observed in Group 1 ($p<0.05$). No statistically significant difference was found between the groups when age and semen volume were compared ($p<0.05$). CONCLUSIONS: A possible difference between the groups was investigated by examining the levels of 8-isoprostaglandin and Raftlin in seminal fluid. It was found to be significantly lower in the fertile and fertile groups compared to the infertile groups. Accordingly, both parameter levels; It is thought to have an effect on sperm concentration and morphology. We think that new studies that can be done on this subject can support our findings.
**Keywords:** Fertile, Infertile, 8-Isoprostaglandin, Raftlin

**S-128**
**OXIDATIVE STRESS METABOLISM IN BOTH MITOCHONDRIA AND CYTOSOL OF THE BRAIN AND SPINAL CORD TISSUES IMPAIRED IN SOD1G93A ALS RATS AS A RESULT OF MUTANT SOD1G93A PROTEINS**

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BACKGROUND AND AIM: ALS is the most common fatal motor neuron disease and incidence of the disease is increasing. There is no effective treatment against ALS and urgent therapeutic approaches are required for the treatment of people with ALS. Thus we aimed to investigate oxidative stress metabolism of the brain and spinal cord, since SOD1 is the most powerful anti-oxidant enzyme. METHODS: 90 SOD1G93A mutated albino male rats weighing 140–650 g were used for the experiments. Mitochondrial and cytosolic fractions of the brain and spinal cord were prepared and used for the experiments. SOD1G93A protein aggregation was evaluated in the both brain and spinal cord. Enzyme activity was measured via spectrophotometer. RESULTS: Cytosolic and mitochondrial glucose-6 phosphate dehydrogenase (G6PD), 6-phosphoglucanate dehydrogenase (6-PGD), glutathione reductase (GR) and glutathione-s transferase (GST) enzyme activities were impaired in the SOD1G93A mutated rats compared to the healthy controls of each group in both spinal cord and brain. Additionally SOD1G93A protein aggregation were observed in the cytosol and mitochondria of both spinal cord and brain. CONCLUSIONS: Oxidative stress metabolism, pentose phosphate pathway (PPP), and glycolysis in both brain and spinal cord tissues have been impaired because of the accumulation of SOD1G93A aggregates. Therefore, targeting oxidative stress metabolism and PPP can be a promising therapeutic target to cure people with ALS in the future.
**Keywords:** Amyotrophic lateral sclerosis,brain, spinal cord, oxidative stress

**S-129**
**CREATINE SUPPLEMENTATION WITH EXERCISE EXHIBIT TISSUE-SPECIFIC EFFECTS ON RESPONSE TO OXIDATIVE STRESS**

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BACKGROUND AND AIM: Creatine (Cr) supplementation causes an increase in exercise performance by increasing intramuscular storage phosphocreatine levels. In this study, the oxidative effects of exercise, which has a biphasic effect on oxidative stress, in combination with creatine supplementation in muscle and liver tissue were investigated. METHODS: In the study, 42 Balb-c male mice were used and randomly divided into six groups; Control (C), Low-Intensity Exercise (LIE), High-Intensity Exercise (HIE), C+Cr, LIE+Cr, HIE+Cr. Exercise groups were performed low-intensity (8 m/min/30 minutes/day) and high-intensity (24 m/min/30 minutes/day) exercise on a mouse treadmill for 5 days/week and 8 weeks. Cr was added to the daily diet at a rate of 4%. At the end of the study, the skeletal muscle and liver tissues were taken and homogenized. Peroxynitrite ($ONOO^-$) and protein carbonyl (PCO) levels were analyzed to assess oxidative stress. RESULTS: A statistically significant difference was found between the groups in PCO levels in muscle tissue and $ONOO^-$ levels in liver tissue (respectively; $p<0.001$, $p=0.001$). In the exercise groups that received creatine supplementation, compared to the groups that did not receive the supplement; PCO levels in muscle tissue and $ONOO^-$ levels in liver tissue were found to be lower. On the other hand, there was no statistically significant difference between the groups in the levels of $ONOO^-$ in muscle tissue and PCO levels in liver tissue (respectively; $p=0.671$, $p=0.708$). PCO levels in muscle tissue were higher than liver tissue, and $ONOO^-$ levels in liver tissue were higher than muscle tissue. CONCLUSIONS: Proteins undergoing oxidative modification with increased reactive oxygen species during exercise in muscles are converted to PCO derivatives, and reactive products such as $ONOO^-$, which are formed following these modifications, are metabolized in the liver. Our results show that creatine supplementation against reactive oxygen species formed by the effect of exercise creates a tissue-specific antioxidant effect and reduces oxidative stress.
**Keywords:** Creatine, exercise, oxidative stress

**S-130**
**THE IMPORTANCE OF FLOW CYTOMETRY IN A CASE OF PLASMA CELL LEUKEMIA**

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BACKGROUND AND AIM: A 49-year-old male patient presented to hospital with complaints of fatigue and sore throat. The patient diagnosed with upper respiratory tract infection and was referred to higher-level hospital due to high creatinine results. In USG of patient who was diagnosed with acute renal failure and underwent further investigations in our hospital, echogenicity of the kidney parenchyma was slightly to moderately narrowed, and minimal free fluid was observed around the liver and gall bladder. Upon detection of prolymphocytes in peripheral smear of the patient, he was referred to us for flow cytometric analysis with a preliminary diagnosis of chronic lymphocytic leukemia(CLL) from peripheral blood. METHODS: In the flow cytometric analysis, no pathology in the direction of CLL was observed in the gated lymphocyte region (34% of the total) in CD45-SSC graph. However, it was seen that cell population detected up to 39% of the total in CD45(-) region could not be evaluated as debris in terms of size and granularity using the FSC-SSC graph. Considering that these cells might be abnormal plasma cells, additional flow cytometric analyzes were performed. RESULTS: It was determined that 24% of the total CD138(+) and CD38(+) were found in the cells gated CD45(-) region. The results of flow cytometric analysis were evaluated together with clinical data, and patient was diagnosed with "Plasma Cell Leukemia". CONCLUSIONS: In conclusion, if a group is observed in CD45(-) region, we recommend that a flow cytometric immunophenotyping study be performed for the diagnosis of plasma cell dyscrasia after exclusion of debris in this group.
**Keywords:** CD38, CD138, Flow cytometry, Plasma cell leukemia

**S-131**
**BLOOD AND SERUM BIOMARKERS CORRELATED WITH SEVERITY AND MORTALITY OF COVID-19 INFECTION IN THE ELDERLY PATIENTS**

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BACKGROUND AND AIM: World has been dealing with the COVID-19 pandemic since December 2019. Despite vaccination, people are still infected people and died by COVID-19 worldwide. Since elderly population was categorized as risk group, we aim to evaluate serum and blood biomarkers indicating disease severity and mortality in those patients. METHODS: Blood and serum biomarkers of 22 patients (70-90 years old) were investigated and compared between deceased and survived patients. RESULTS: Fibrinogen, d-dimer, C-reactive protein (CRP) levels increased in the deceased patients compared to the survived ones. P and Mg levels increased in the deceased patients, where Ca levels significantly decreased. Glucose, blood urea nitrogen (BUN), alanine transaminase (ALT), aspartate aminotransferase (AST), troponin, lactate and procalcitonin levels significantly decreased in the deceased patients compared to the survived ones infected by COVID-19. Hematocrit (HCT), hemoglobin (Hb), total Hb, red blood cells (RBC), PDW and ferritin levels decreased in the deceased patients compared to the healthy ones, where red cell distribution width (RDW) and prothrombin time (PT) levels significantly increased in the deceased patients infected by COVID-19. WBC and NEU levels significantly increased in the deceased patients, controversially %NEU, %LYM, MONO, %MONO, EOS, %EOS, %BASO, MPV, PT and INR levels significantly decreased in the deceased patients compared to the survived ones. CONCLUSIONS: Clinical finding of our stud may help clinicians to predict severity and mortality of COVID-19 in the elderly population.
**Keywords:** COVID-19; elderly patients, blood biomarkers, serum biochemistry, pandemic

**S-132**
**LOW VITAMIN B12 LEVELS IN SAMPLES FROM FAMILY HEALTH CENTERS**

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BACKGROUND AND AIM: Ideally, collecting and studying blood in a central place for laboratory tests is desirable, but this is not very practical in practice. Examinations that cannot be performed in hospitals and family health centers (FHC) with protocols made between health institutions can be studied by transporting blood to laboratories in hospitals. However, there may be many problems such as unnecessary and erroneous test requests, blood collection to the wrong tubes, delay in delivery to the laboratory, and faulty centrifuge. In the biochemistry laboratory of our hospital, samples from 2 district state hospitals and 19 FHCs also work. Our aim in this study was to determine the causes of vitamin B12 levels detected in patient results. METHODS: Vitamin B12 patient results between January and September 2021 were obtained from the Laboratory Information Management System (LBYS) program. The internal quality control results of the vitamin B12 test were obtained from the immunoassay device (2 DXI 800, Beckman Coulter). External quality control results were obtained through the Riqas program. Total analytical error (TAH) was calculated from these values. RESULTS: TAH: 16.3% for the 1st device and 21.3% for the 2nd device. Ratios of patients below the reference range (<120 pg/mL) to the total number of patients: In January 2021-August 2021, parallel to the number of patients, rates of FHC and hospital were 7.6%-6.0% in January; February 8.7%-5.2%; March 7.7%-5.2%; April 11.6%-7.3%; May 16%-11.4%; June 12.1%-6.6%; July 29.7%-16.9%; August: 27.9%-15.1%. CONCLUSIONS: It was thought that the serum vitamin B12 levels in the patients, especially in the blood coming from FHCs, were low, which may be due to preanalytical errors.
**Keywords:** Preanalytical error, sample transfer, vitamin B12

**S-133**
**CASE REPORT: ABNORMAL HEMOGLOBIN VARIANT WITH ERYTHROCYTOSIS HEMOGLOBIN ANDREW MINNEAPOLIS**

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BACKGROUND AND AIM: Abnormal hemoglobins (Hb) are the most common hemoglobinopathies after thalassemias. More than 80 abnormal forms of Hb have been reported in the Turkish population, including alpha, beta, and gamma chain variants. In this case, abnormal Hb variant Hb Andrew Minneapolis with erythrocytosis was found in a 25-year-old pregnant patient. METHODS: Routine biochemistry, hemogram and urine tests were requested from a 25-year-old, 10-week pregnant patient who applied to the emergency department with complaints of nausea, vomiting, headache. Hb variant analysis was performed by HPLC (TOSOHG8) method, after the result was low (3.4%) and an abnormal peak was observed in the patient for whom HbA1c test was requested due to hyperglycemia. DNA sequencing analysis was performed to detect the Hb variant in the patient whose HPLC pattern showed variant peak and could not be identified. RESULTS: The patient's blood glucose is 210 mg/dL, Hb 16.2 g/dL (reference range: 11.5-15.5 g/dL), HCT 48.3% (reference range: 35.5-48%), MCV 91.4 fl, RBC 4.93x1012/L (reference range: 3.8–5.6×1012/L), MCH was 31.6 pg, MCHC was 34.6 g/dL. The Hba1c result was 3.4%. As a result of variant analysis, Hb A was 52.4%, Hb A2 2.52%, Hb F 0%, variant Hb 45.1%. As a result of the hemoglobin DNA sequence analysis, the c.435 G>C p.Lys145Asn exonic variant was detected. This variant, called Hb Andrew Minneapolis, is a missense variant with high oxygen affinity that causes lysine, the 145th amino acid in the protein sequence, to be converted to asparagine. Hbs with high oxygen affinity bind more O2 than normal Hb and leave less O2 to the tissues. Mild hypoxia in the tissues triggers the production of erythropoietin and the number of erythrocytes increases, causing erythrocytosis. CONCLUSIONS: Lower or higher than expected HbA1c results should be evaluated and variant analysis should be performed if necessary. Abnormal peaks should be evaluated together with DNA sequence analysis, not alone. In addition, it should be kept in mind that, although rare, variant hemoglobins may cause secondary erythrocytosis.
**Keywords:** Hemoglobin variant, Andrew Minneapolis, Erythrocytosis

## S-134
## SERUM LEVELS OF NEURONAL MARKERS IN KIDNEY TRANSPLANT RECIPIENTS AND DONORS

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BACKGROUND AND AIM: The aim of this study was to evaluate changes in serum levels of S100B, neuronspecific enolase, glial fibrillary acidic protein in living donors and recipients after kidney transplantation. METHODS: We enrolled 56 patients into the study. Of these, 27 underwent donor nephrectomy (group D), and the remaining 29 underwent kidney transplantation (recipient, group R). Neuromarkers were measured in samples obtained before the procedure, on postoperative day 7, and at 1 month postoperatively. RESULTS: Postoperative kidney functions were impaired in patients who underwent living donor nephrectomy compared with their preoperative levels (P<0.001), although no significant difference was observed in their neuromarkers. The postoperative delirium rating scale was also impaired after living donor nephrectomy compared with preoperative levels (P<0.05). Postoperative kidney functions were improved (P<0.001), and a progressive decrease in neuromarker levels (P <0.05) was observed in kidney transplant recipients compared with their preoperative levels. Linear regression analysis showed a significant correlation between neuron-specific enolase, glial fibrillary acidic protein levels and kidney functions in recipients. CONCLUSIONS: The present study demonstrated that neuron-specific enolase and glial fibrillary acidic protein levels decrease in kidney transplant recipients and do not change in donors. This result indicated that there is no evidence of neurotoxicity in either recipients and donors in kidney transplantation.
**Keywords:** S100B, Neuron-Specific Enolase, Glial Fibrillary Acidic Protein, Kidney Transplantation

## S-135
## SERUM NO, S100B, NSE CONCENTRATIONS IN MIGRAINE AND THEIR RELATIONSHIP TO THE DISEASE

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BACKGROUND AND AIM: Migraine pathogenesis still remains uncertain. Studies have found contradictory results regarding NO, S100B and NSE parameters in migraine patients. Therefore, in our study, we aimed to measure NO, S100B and NSE concentrations in migraine patients, compare them with the control group and find the relationship between these parameters. METHODS: 52 patients (35 women and 17 men) diagnosed with migraine according to the International Headache Classification II criteria [28] were included in the study. 30 healthy participants without any history of disease were included in the control group. Serum NO, S100B and NSE levels were determined in all participants. RESULTS: A statistically significant difference was found in the NO, S100b and NSE parameters of migraine and control group patients participating in this study (p = 0.004, p = 0.002, p = 0.000, respectively). It was found that there was a moderate positive linear correlation between serum S100B and NSE in the migraine patients in our study (r = r = 442, p = 0.011). CONCLUSIONS: In our study, the fact that there was a statistically significant difference in the NO, S100b and NSE parameters of migraine and control group patients indicates that these molecules can be effective in the pathogenesisof migraine. The moderate positive linear correlation found between serum S100B and NSE in migraine patients in our study demonstrates that these molecules together can be effective in the pathogenesis
**Keywords:** Migraine, Nitric oxide, S100B protein and Neuron-specific enolase

## S-136
## EVALUATION OF HOMOCYSTEIN THIOLACTONASE (HTLASE), PARAOXONASE (PON-1) AND ARYL ESTERASE (ARE) ENZYME ACTIVITIES IN PEDIATRIC STROKE PATIENTS

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BACKGROUND AND AIM: The aim of this study is to evaluate HTLase,PON-1 and ARE enzyme activities and other biochemical parameters in pediatric stroke cases and to compare these data with healthy controls to investigate their role and clinical significance in pathophysiology of stroke in children METHODS: Out of the pediatric cases who presented to University of Health Sciences Ankara Health Training and Research Center Pediatric Neurology Clinic,this study included 42 pediatric stroke cases and 34 healthy controls.PON-1 and ARE activities were measured by Eckerson method,HTLase activity was measured by modified Billecke method.Roche Cobas6000analyzer was used for PON-1 and HTLase whereas ShimadzuUV-1700 spectrophotometer was used for ARE measurement.Glucose,TC,TG,HDL-C levels were measured by Roche Cobas8000 analyzer,Vitamin B12 and folate levels were measured by Roche Cobase601 analyzer,homocysteine levels were measured by Shimadzu LC-20HPLC analyzer,fibrinogen levels were measured by StagoSTA RMax analyzer. SPSS version24 and Analyse-it programs were used for statistical analysis. RESULTS: In our study,PON-1 levels were found to be statistically significantly higher in the pediatric stroke group (median=135,IQR=58-180U/L) compared to control group (median=59,IQR=45-145U/L) and patients using antiepileptic drugs (median=172,IQR=134-262U/L) compared to those who did not(median=60,IQR=50-157U/L).There was no statistically significant difference in HTLase and ARElevels. There was a correlation between HDL-C and PON-1(r=0.371,p<0.05),ActivatedPON-1(r=0.382,p<0.05)andARE(r=0.606,p<0.001) in control group,whereas there was weak correlation between LDL-C and PON-1(r=0.308,p<0.05) and PON-1/HDL-K (r=0.379,p<0.05) in pediatric stroke group. CONCLUSIONS: The mechanisms of PON-1 elevation and involvement in the pathophysiology of pediatric stroke should be investigated.In the clinical approach to pediatric stroke,it may be useful to consider PON-1 activity in combination with lipid profile.
**Keywords:** Stroke, pediatrics, aryldialkylphosphatase, homocysteine, anticonvulsants

## S-137
## INVESTIGATION OF THE RELATIONSHIP BETWEEN ONE CARBON METABOLISM AND NITRIC OXIDE METABOLISM IN PEDIATRIC MIGRAINE AND TENSION TYPE HEADACHE

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BACKGROUND AND AIM: The aim of this study was to measure serum vitamin B12, folic acid(FA), homocysteine(Hcy), methylmalonicacid(MMA),nitric oxide(NO) levels in pediatric patients diagnosed with migraine and tension type headache(TTH) according to the International Headache Society's(IHS) classification and diagnostic criteria and to investigate their relationship with these disease groups. METHODS: Out of the pediatric cases who presented to University of Health Sciences Ankara Health Training and Research Hospital,Pediatric Neurology Clinic,this study included 39 migraine,42 TTH and 34 healthy controls. Vitamin B12 and FA levels were measured by Roche Cobas e601 analyzer,Hcy levels were measured by Shimadzu LC-20 HPLC analyzer,MMA levels were measured with the modified LC-MS/MS method of Kushnir et al.and NO levels were measured with the enzymatic method modified by Smarason.SPSS version 24 and Analyse-it packaged programs were used for statistical analysis. RESULTS: There was no significant difference between the patient and control groups in terms of vitamin B12 and FA levels.Hcy levels were found to be significantly higher in both migraine and TTH groups compared to the control group. MMA level was found to be significantly higher in the TTH group compared to the control group. Total nitrite and nitrate levels were found to be significantly higher in the migraine and TTH group compared to the control group. Hcy and NO levels were found higher in our patient groups compared to the control group. Median values of MMA were higher in the patient groups than in the control group. CONCLUSIONS: Since the pathophysiology of migraine and TTH is still unclear,the mechanisms that play a role should be investigated in further studies in both adult and pediatric populations.
**Keywords:** pediatrics, migraine, tension type headache, nitric oxide

**S-138**
**APPLICATION OF SAMPLES FROM MINICOLLECT 9NC COAGULATION TUBES AND BD VACUTAINER CITRATE TUBES USED IN COAGULATION TESTING**

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BACKGROUND AND AIM: In this study; pediatric blood collection tube "MiniCollect® 9 NC, 3.2% - 1ml / Ref 450539" (Greiner Bio-One - Austria) and adult blood collection tube "BD Vacutainer® Citrate Tubes 0.109M, 3.2% - 1.8 ml / It was aimed to compare the test results of coagulation parameters obtained from patients using Ref 363047" (Becton Dickinson- New Jersey). METHODS: Venous blood samples were obtained from 50 volunteers using both pediatric and adult coagulation tubes. Blood samples were taken by a specialist phlebotomist, according to the Clinical Laboratory Standards Institute (CLSI). The tubes were filled taking into account the fill lines. Immediately after venous blood collection, the tubes were carefully inverted according to the instructions for use of the blood collection tubes. Tubes were centrifuged Nuve-NF 1200 in a temperature-controlled centrifuge. MiniCollect® tubes; It was centrifuged at 3000 g at 15-24°C for 10 minutes, while BD Vacutainer® Citrate tubes were centrifuged at 2000-2500g at 18-25°C for 10-15 minutes. All samples were obtained and processed simultaneously; then prothrombin time (PT), activated partial thromboplastin time (aPTT), D-dimer, fibrinogen, thrombin time parameters were tested. Analyzes were run on the Instrumentation Laboratory ACL TOP 700 CTS Coagulation Analyzer. RESULTS: aPTT: Deviations were found between the BD® 9NC Coagulation tube and the MiniCollect® 9NC Coagulation tube. Prothrombin Time: Equivalent performance was observed across all samples. Thrombin Time: In summary, despite the deviations and results found, a 1 mL pediatric tube (MiniCollect® 9NC Coagulation tube) is largely equivalent to a 1.8 mL adult tube (BD® 9NC Coagulation tube). CONCLUSIONS: In this study; pediatric blood collection tubes for pediatric population and patients with difficult vascular conditions was used to compare the test results of coagulation parameters obtained from patients. From a clinical perspective, the MiniCollect Coagulation tube is largely equivalent to the BD Coagulation tube. The use of MiniCollect® 9 NC is suitable for pediatric population and patients with difficult vascular conditions to eliminate the problems associated with adult tube blood draw and the consequent insufficient sample and inaccurate test results. The MiniCollect® 9NC tube is a blood collection device developed for pediatric specimen testing.
**Keywords:** coagulatio, pediatric tube, preanalytical

**S-139**
**DETERMINATION OF 17-ALPHA-HYDROKSIPROGESTERONE REFERENCE RANGE IN PEDIATRIC AGE GROUP BY LC-MS/MS METHOD**

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BACKGROUND AND AIM: 17-alpha-hydroksiprogesterone (17-OHP) is a steroid hormone mainly synthesized in adrenal glands.It is used in diagnosing congenital adrenal hyperplasia in newborns and differential diagnosis of hirsutizm, infertility, adrenal and ovarian tumors and gonadal dysfunction as well as early puberty in adolescents and adults. Age, gender and applied methodologies are the variables affecting the reference ranges. Since the standardization of preanalytical conditions in pediatic groups is very difficult, calculating reference ranges from laboratory data is one of accepted approach. In this study,we aimed to define 17-OHP refence ranges from our laboratory data. METHODS: In this study, 59.800 (49.500/10.300: F/M) individuals admitted to Acibadem Labmed Clinical Laboratories between 2012-2021 were included. Individuals with lower results than detection limit (520), hospitalized or patients on followed-up (15.500), or patients diagnosed with CAH, PCOS, hirsutism, etc. (2000) were excluded. 17-OHP was analyzed by using the in-house methodology on mass spectrometry. RESULTS: The classification depending on age and gender was made by using box-plot observationally and Lahti criteria statistically. Reference ranges were determined from laboratory data using two different approaches, with outliers (Bhattacharia method) and without. The lower and upper reference limits for 17-OHP were 0.11-0.9 ng/ml in the 1-12 y age group, 0.15-2.0 ng/ml in the 12-17 y age group in girls; 0.08-0.99 ng/ml in the 1-14 y age group, 0.25-1.58 ng/ml in the 14-17 y age group in boys respectively with the Bhattacharia method. For the other approch in which the extreme values are discarded, the lower and upper reference limits are determined as 0.0525 ng/ml (90% CI 0.05178-0.05335) - 0.77 ng/ml (90% CI 0.7643-0.7843) in the 1-12 y age group, 0,1361 ng/ml (%90 CI 0,1345-0,1377) – 1.72 ng/ml (%90 CI 1,6973-1,7513) in the 12-17 y age group in girls; 0,05 ng/ml (%90 CI 0,04876-0,05171) – 0.98 ng/ml (%90 CI 0,9594-1,0123) in the 1-14 y age group, 0,09 ng/ml (%90 CI 0,07986-0,1054) – 1.80 ng/ml (%90 CI 1,7290-1,8849) in the 14-17 y age group in boys respectively. CONCLUSIONS: It is thought that the determination of pediatric reference ranges of 17-OHP based on age, gender and analytic methodology is important both for the quality of the laboratory and clinically.
**Keywords:** Reference Range, 17-alpha-Hydroxyprogesterone,Bhattacharia

**S-140**
**PERFORMANCE EVALUATION OF CEDIA BENZODIAZEPINE ANALYSIS**

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BACKGROUND AND AIM: Drug screening by immunochemical method is performed with in vitro diagnostic medical diagnostic tests designed for qualitative and semi-quantitative analysis of drugs and stimulants in human urine. This method provides a preliminary analytical test result and a more specific chemical method, chromatography, is accepted as a reference for the confirmed result. For routine measurements, it is important that the laboratory evaluates the performance of the method used, in order not to report false positive and false negative results METHODS Cedia benzodiazepine kit, which will be studied with IndikoPlus automatic analyzer, was tested in Izmir Katip Celebi University Ataturk Training and Research Hospital substance abuse analysis department of medical biochemistry laboratory. Repeatability and accuracy studies have been carried out. Low,high control materials and threshold (300ng/ml) calibrator were run for 5 days, two cycles per day, five times each cycle. Cv and bias calculated. LGC external quality control materials stored at -80 degrees were studied. In our laboratory, 84 samples for which benzodiazepine analysis was performed in the LC-MSMS (QTrap) system were also screened by immunochemical method, and the results were compared as negative/positive according to the 300 ng/ml threshold value. RESULTS: Benzodiazepine CV values; for low and high level control; 7.40% and 6.14%; For the 300 ng/ml calibrator, it was calculated as 7.77%, and the bias levels were calculated as 14.4, 6.21, 19.1, respectively. According to the evaluation of 11 different external quality control samples with known contents and a total of 84 patients who have results for different benzodiazepine molecules by chromatography, results with the Cedia kit, samples containing alprozolam, nordiazepam, midazolam, clonozepam give high benzodiazepine levels. Low readings occur in samples containing lorezepam.For Oxazepam, it can read low at values below 500ng/ml. Bromazepam and etiozolam are similar by chromatography. When these samples are evaluated according to the threshold values; 56/61 truepositive, 27/34 truenegative results. LOD is 3ng/ml. CONCLUSIONS According to the results of the initial evaluation, it may be appropriate to suggest the clinician to request chromatographic screening or confirmation, especially in samples with results 300-1000ng/ml, if there is a clinical condition suspected in terms of false positivity.
**Keywords:** benzodiazephine, drug abuse, immunchemical screening

**S-141**
**COMPARISON OF TWO DIFFERENT REAGENTS ANALYZING WITH THE SAME METHOD IN SERUM TOTAL IMMUNOGLOBULIN E MEASUREMENT: A PRELIMINARY STUDY**

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BACKGROUND AND AIM: Immunoglobulin E (Ig E) has an important role in allergic diseases. Today, immunoturbidimetric methods are preferred in IgE analysis due to their time/cost efficiency in routine laboratory practice. In this study, it was aimed to compare two validated immunoturbidimetric reagents for the same autoanalyzer. METHODS: Serum samples were analyzed for total IgE with Bioanalytic reagent (AU680, BeckmanCoulter). After portioning, the samples were stored at -20°C. A total of 40 samples were included in the study. 20 samples were below the upper reference limit (100 IU/mL) and 20 samples were above. Then serum IgE levels were analyzed with Biomed. Average % bias for Bioanalytic was obtained from external quality control results (two months). Portioned external quality control samples (Qualicont) were then analyzed with Biomed. MedCalc program was used for statistical evaluation. RESULTS: In the Passing-Bablock regression analysis, y=0.58x+9.47. The mean % difference (95% confidence interval) in the Bland-Altman plot was found to be -32(-44; -21). According to the external quality results, the mean % bias was -31% for Bioanalytic and -8% for Biomed. Two of the patients who were below the upper limit with the Bioanalytic were found to be above 100 IU/mL in the measurement with the Biomed. CONCLUSIONS: There was a limited number of samples in the study. When the method comparison and external quality results were evaluated together, the negative bias of the Bioanalytic Ig E kit was remarkable. The most important limitation of the study was that there was no group for the clinical decision limit. A comprehensive study was planned as a result of the data (CLSI EP09). Autoanalyzer compatible reagents are encountered

especially in photometric systems. Ultimately, verification is important for any new test/system but becomes more important in such cases.
**Keywords:** Total Immunoglobulin E, photometry, verification

**S-142**
**INVESTIGATION OF PLASMA SPEXIN LEVELS IN ALZHEIMER'S DISEASE**

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BACKGROUND AND AIM: Alzheimer's disease (AD) is a chronic neurodegenerative disease characterized by progressive memory loss and cognitive impairment. Increasing evidence suggests that many neuropeptides may be associated with the pathogenesis of AD. In this direction, the plasma levels of Spexin (SPX), a novel neuropeptide, in AD were investigated. METHODS: This study was designed as a case-control study to include 45 Alzheimer's and 45 Healthy individuals. Analyzes were carried out by using the plasma samples available in our sample pool. SPX levels in plasma samples were measured by ELISA method in accordance with the kit procedure. Results are given in pg/mL. In addition to the differences in mean age and plasma levels between the groups, the relationship between the relevant parameters was analyzed statistically. RESULTS: In the study, no statistically significant difference was observed between the mean age of the AD group (68.64±7.05 years) and the control group (66.64±6.58 years). The mean plasma SPX levels were found to be statistically significantly lower in the AD group (431.22±89.08 pg/mL) compared to the control group (608.95±160.76 pg/mL)($p<0.001$). In addition, a statistically significant negative correlation was observed between age and SPX levels (r:-0.66;$p<0.001$). CONCLUSIONS: According to the findings from this preliminary study, it was observed that plasma SPX levels in AD were negatively correlated with age. To the best of our review, this study is the first report to reveal plasma SPX levels in AD. It seems that SPX, whose roles have just been discovered, may be useful in the diagnosis and treatment of AD, as in many diseases.
**Keywords:** Alzheimer's Disease, Neuropeptide, Spexin, Age

**S-143**
**BUTYRYLCHOLINESTERASE ACTIVITY AND DOPAMINE, OXYTOCIN LEVELS IN ALZHEIMER DISEASE: A PRELIMINARY STUDY REPORT**

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BACKGROUND AND AIM: In this study, we aimed to investigate serum dopamine, oxytocin levels, and butyrylcholine esterase enzyme activity in Alzheimer's disease (AD). METHODS: A total of 40 participants were included in the study. 20 of the participants consisted of the patient group and 20 of them were from the control group. Dopamine and oxytocin levels in sera of AD and control groups were measured by the ELISA (Enzyme-Linked ImmunoSorbent Assay) method, while butyrylcholinesterase (BChE) activity was measured by the spectrophotometric method. RESULTS: When the patient and control groups were compared to each other, a statistically significant difference was found in the BChE, dopamine, and oxytocin levels (respectively $p<0.01$, $p=0.02$, $p=0.027$). However, no statistically significant results were obtained in the correlation analysis. CONCLUSIONS: According to our results, we found that the BChE activity and oxytocin levels in the patient group were lower than in the control group. Conversely, dopamine levels in the patient group were higher than in the control group. Wherefore our research is a preliminary study, we believe that the more significant results could be reached by increasing the number of patients.
**Keywords:** Alzheimer, dopamine, oxytocin, butyrylcholinesterase

**S-144**
**EFFECT OF RESVERATROL ON MID-REGIONAL PROADRENOMEDULLIN, MALONDIALDEHYDE AND INDUCTABLE NITRIC OXIDE SYNTHASE IN A DIABETIC RAT MODEL**

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BACKGROUND AND AIM: Many herbal and chemical molecules are used in the treatment of diabetes. Among them, resveratrol is thought to be effective in the treatment of diabetes thanks to its antioxidant, anti-inflammatory and homeostatic properties. In this study, the effect of resveratrol on MR-proADM, MDA and iNOS was investigated in a rat model of diabetes. METHODS: 21 male Wistar Albino rats (16-20 weeks old) included in the study were divided into control group (KG), diabetic group (DG) and resveratrol treatment groups (RTG), with 7 rats in each group. Experimental diabetes was induced by a single intraperitoneal (IP) injection of streptozotocin (STZ) (60mg/kg). Rats in RTG were given IP resveratrol at 5 mg/kg/day for 21 days. On the 22nd day of the study, the rats were anesthetized and intracardiac blood samples were taken. MR-proADM, MDA and iNOS levels were measured in these bloods. RESULTS: MR-proADM levels of rats in KG were higher than in DG (23.2±6.6 vs 12.5±3.1 ng/L, $p<0.05$) but were not different from RTG (16.9±5.0 ng/L, $p>0.05$). MDA levels of rats in KG were lower than in DG (3.48±1.50 vs. 7.36±2.58 nmol/mL, $p<0.05$) but were not different from RTG (5.10±2.47, $p>0.05$). iNOS levels of rats in KG were lower compared to DG (0.80±0.55 vs. 2.27±1.12 ng/mL, $p<0.05$) but not different from RTG (1.44±0.96ng/mL, $p>0.05$). In addition, a moderate negative correlation was found between MR-proADM and MDA levels (Sp r=-0.701 $p<0.001$). CONCLUSIONS: Resveratrol treatment may reduce the negative effects of diabetes in diabetic rats with both anti-inflammation and homeostatic effects by changing iNOS and MR-proADM and with antioxidant properties by reducing MDA.
**Keywords:** Resveratrol, Diabetic Rat, MR-proADM, Malondialdehyde, iNOS

**S-146**
**PURIFICATION OF LIPASE ENZYME FROM BOVINE PANCREAS AND INVESTIGATION OF INHIBITION EFFECTS OF PROPOLIS EXTRACTS ON THIS ENZYME ACTIVITY**

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BACKGROUND AND AIM: The aim of this study is searching purification of pancreatic lipaz enzyme with chromatographic techniques that are gathered from biological sources and frequently used in medical and drug industry, effect of some crucial natural propolis sources that can show inhibitor effect on enzyme activity thus investigating availability of natural inhibitors for bariatric treatment. METHODS: In the study, pancreatic lipase enzyme (EC.3.1.1.3), which is responsible for digestine of triglyceride and released by acinar cells of pancreas, was purified with gel-filtration chromatography method from bovine pancreas and lipase activity which is obtained with 17,94 % productivity ratio and 568.58 purification ratio and characterized with sodium dodecyl sulfate polyacrylamide gel electrophoresis. Propolis samples were collected from six different regions and after their extraction, their effect on pancreatic lipase activity was analyzed. RESULTS: All propolis extracts indicated inhibitor effect and their IC50 values were calculated. IC50 values are as 4,00 mg/mL (Duzce propolis), 11,80 mg/mL (Balikesir propolis), 7,69 mg/mL (Kirmizi propolis), 6,91 mg/mL (Hakkâri propolis), 12,68 mg/mL (Kirklareli propolis), 9,23 mg/mL (Artvin propolis). According to this data Duzce propolis extract has the highest inhibition effect with ratio of IC50 4,00 mg/mL. To define composition of propolis extracts, total amount of polyphenol and flavanoid matter were calculated spectrophotometrically. This sample with the highest total amount of polyphenol and flavanoid matter has been with ratio of 41,35+0,43 mgGAE/ mL and 5,69+0,05 mgQUE/mL. CONCLUSIONS: The gathered findings show that inhibition effect can be depended on propolis composition and propolis extracts have the potential to be used as anti-obesity agent.
**Keywords:** Enzyme purification, Inhibition, Obesity, Pancreatic lipase, Propolis

**S-147**
**INVESTIGATION OF THE RELATIONSHIP BETWEEN PRIMARY HEADACHE SEVERITY AND DAILY FOOD PREFERENCES IN YOUNG ADULTS NOT YET DIAGNOSED WITH MIGRAINE**

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BACKGROUND AND AIM: Migraine is a complex neurological disease that has more than one gene in its etiology and environmental factors are involved in the expression of the gene. The aim of our study; The aim is to provide benefits in the food preferences process of people with strong symptoms who have not yet been diagnosed with migraine, by examining the relationship between nutrition, which is an environmental risk factor in the etiology of migraine, and the "Headache Disability Index" used in the diagnosis of migraine. METHODS: The study included 197 people between the ages of 18-45, who had not yet been diagnosed with migraine, had strong symptoms, had no metabolic disease, psychiatric disease or disability. In the first stage of the study, the internationally used "Headache Disability Index" scale was applied to the participants. Then, the participants chose foods from the nutrient diagram we created from the safe foods expressed as "Migraine Safe Food". When they processed the same diagram again after four weeks, the changes they made during this period were accepted as data. Evaluation of the data

SPSS 26 statistical program was used and p<0.05 was considered significant. RESULTS: While a change of 29 points was observed in the "Headache Disability Index" scale in 47% of the participants who took into account the recommendations and made a change in their diet towards "Migraine Safe Food" (p<0.05), a difference between 24-26 points was found in 38% of them (p>0.05), it was not considered significant. In the remaining 15%; Scores below 18 points were made. CONCLUSIONS: It has been determined that the dietary intake of nutrients expressed as "Migraine Safe Food", which will support the synthesis and release of serotonin, through diet, has positive and significant effects on the development and symptoms of migraine and the reduction of social isolation caused by these symptoms.
**Keywords:** Migraine, Headache, Preventive nutrition, Food selection

**S-148**
**ZINC DEFICIENCY: WHICH MATRIX SHOULD WE USE?**

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BACKGROUND AND AIM: Zinc is a multifunctional trace element. Due to its positive effects on the immune system, the use of zinc supplements has become widespread during the COVID 19 pandemic Both zinc deficiency and excess intake can lead to significant health problems. In this study; we aimed to compare serum and intra-erythrocyte zinc levels to determine most appropriate matrice in requirement and follow-up of zinc replacement. METHODS: Simultaneously measured serum and intra-erythrocyte zinc levels obtained from 285 patients admitted to our laborotory between 2000-2021 were scanned retrospectively. Atomic absorption spectroscopy method had been used for measurements. Quantitative results of the two different matrices were analyzed by simple linear regression analysis. The agreement between the classifications obtained according to the reference interval was evaluated with kappa statistics. RESULTS: A very weak agreement was observed between intra-erythrocyte and serum zinc measurements according to classification agreement (Kappa statistic=0.000; p=0.994). 149 (59.6%) of 250 results in serum were normal, whereas low in intra-erythrocytes. 6 of results were low in intra-erythrocytes, whereas were high in serum and 2 of results were high in intra-erythrocytes whereas were low in serum samples. The relationship between the measurements of the two matrices was not significant in the linear regression analysis (B=0.011; r=0.106; p=0.073). CONCLUSIONS: These findings indicate that serum measurement may be insufficient to detect zinc deficiency. In the light of these findings, it was decided to study both matrices together in terms of functional target and to follow the clinical correlation in the follow-up of zinc replacement therapy in our laboratory.
**Keywords:** Zinc, intra-erythrocyte, Atomic absorption spectroscopy

**S-149**
**THE INVESTIGATION OF SERUM sSORTILIN AND ADAM LEVELS IN THE RELATIONSHIP BETWEEN CORONARY ARTERY DISEASE AND SEVERITY**

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BACKGROUND AND AIM: Coronary artery disease (CAD) is one of the leading causes of morbidity and mortality in the world. Atherosclerotic plaque formation, the main component of which is lipid, is a multifactorial progressive process that constitutes the pathophysiology of CAD. Some new biomarkers are suggested to evaluate this process accompanied by chronic inflammation. This study was designed to investigate the prognostic biomarker potential of sSortilin and ADAM-10 levels, which are thought to have a primary role in its formation, in the evaluation of the clinical course of CAD risk and severity. METHODS: 136 patients who applied to the Recep Tayyip Erdogan University EAH Cardiology Outpatient Clinic and were diagnosed with CAD and underwent coronary angiography were included in the study. Of these patients, 41 were in the single-vessel occlusion group and 95 were in the multi-vessel occlusion group. 39 people with demographic characteristics similar to the patients were selected as the control group. Serum samples were studied with sSortilin and ADAM-10 ELISA method, ApoB and CRP with nephelometric method (Siemens BN II System, Siemens Diagnostics, Germany), Triglyceride spectrophotometric method (Architect c16000, Abbott, USA). Statistics were made using the SPSS program. RESULTS: When the demographic characteristics of the control and patient groups were evaluated, there was a significant difference between the 2 groups in terms of age, hypertension, diabetes and Gensini scores (p<0.001). sSortilin and ADAM-10 levels were found to be higher in patients compared to controls, but they were not statistically significant (p>0.05). While significant positive correlation between sSortilin and ADAM-10 was present in both patient groups, it was highest in the group with multivessel occlusion (p: 0.009 and r: 0.328). In addition, a significant positive correlation was found between sSortilin and triglycerides (p:0.010 r:0.260), Apo B (p:0.011 r:0.254) and CRP (p:0.005 r:0.321) in the patient group. CONCLUSIONS: The positive correlation observed between sSortilin and triglyceride, Apo B and CRP suggests that sortilin may be effective on both plasma lipid profile and inflammatory response in the atherosclerotic process. In the future, sSortilin and ADAM-10 may be used as a biomarker for coronary artery disease, as well as adding to existing risk factors and promising a new risk assessment.
**Keywords:** ADAM-10,Coronary artery disease, sSortilin

**S-150**
**EVALUATION OF ASYMMETRIC DIMETHYLARGININE AND NEOPTERIN IN PATIENTS WITH IRON DEFICIENCY ANEMIA**

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BACKGROUND AND AIM: Iron deficiency is common in heart failure and is accepted as a common comorbid state in heart failure. Asymmetric dimethylarginine (ADMA) and neopterin are important biomarkers in cardiovascular diseases (CVD). ADMA is an endogenous inhibitor of nitric oxide synthase (NOS) that causes endothelial dysfunction and exacerbating cardiovascular events. Neopterin, synthesized from activated macrophages, is an indicator of inflammation, activation of the immune system, and has an active role in CVD. In the present study, we aimed to evaluate the levels of ADMA and neopterin in patients with iron deficiency anemia (IDA) and healthy individuals and their correlation with each other. METHODS: ADMA and neopterin levels were determined using high performance liquid chromatography (HPLC). RESULTS: Serum ADMA and neopterin levels in patients were higher than those in healthy controls. There was a positive correlation between ADMA and neopterin concentrations in patients with IDA. Serum ADMA and neopterin levels were negatively correlated with hemoglobin, white blood cells (WBCs), hematocrit, serum iron, ferritin, albumin, and total iron binding capacity. ADMA and neopterin levels were determined positively correlated to cardiovascular risk factors. CONCLUSIONS: Patients with IDA exhibited higher ADMA as an indicator of endothelial dysfunction, and higher neopterin levels as a marker of immune activation and inflammation. Our results suggested that ADMA and neopterin may be implicated in the pathogenesis of anemia. We concluded that iron deficiency anemia may be accompanied by susceptibility to CVD due to the dysfunctions of endothelial and immune systems.
**Keywords:** Asymmetric dimethylarginine, iron deficiency anemia, neopterin

**S-151**
**MEASUREMENT OF CARDIAC TROPONIN I IN HUMAN SERUM**

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BACKGROUND AND AIM: Cardiac troponin I (cTnI) is used as a diagnostic biomarker of myocardial infarction. This study aims to develop a reference method for cTnI measurement in patient serum samples to assist in the harmonization of discordant cTnI clinical assays. Quantification of cTnI was obtained in human serum on the basis of an immunoaffinity enrichment strategy and isotope dilution liquid chromatography tandem mass spectrometry (ID-LC-MS/MS) method. The isolation of cTnI from plasma using anti-cTnI antibody attached to magnetic nanoparticles followed by an enzymatic digestion with trypsin constitutes the key steps in the workflow. METHODS: Magnetic dextran nanoparticles (Nanomag®-D) were coupled to the anti-cTnI protein. A tryptic peptide from anti-cTnI was used for confirmation of coupling. Two tryptic peptides from cTnI monitored by ID-LC-MS/MS via parallel reaction monitoring (PRM) and used for quantification. NIST SRM 2921 Human cTnI was used as a calibrant in the study. An isotopically labeled protein analog of cTnI was used as the internal standard. LC-MS/MS analysis was performed on a Thermo Ultimate 3000 Nano-LC system coupled with an Orbitrap MS. RESULTS: Both labeled and non-labeled peptide sequences TLLLQIAK, NITEIADLTQK and anti-cTnI peptide DLPSPIER were successfully detected via protein immunoaffinity enrichment method using ID-LC-MS/MS analysis. cTnI was quantified at a concentration of 24 ng/ml. CONCLUSIONS: A novel ID-LC-MS/MS method was developed for determination of cTnI in serum. The methodology will be improved to cover the cTnI detection range of 0.4-24 ng/ml and validated to serve as a reference method

for cTnI measurements. The method shows promise as a reference method to be used in the certification of matrix-based reference materials in future.
**Keywords:** ID-LC-MS/MS, Cardiac Troponin I, Biomarker, Metrology

**S-152**
**HEMOLYSIS INDEX ASSESSMENT FOR HIGH SENSITIVITY TROPONIN T**

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BACKGROUND AND AIM: False low results can be obtained in high sensitivity troponin T (hsTnT) levels when samples with a hemoglobin concentration >100 mg/dL are used, as indicated in the kit insert, but the hemolysis index (HI) was not defined in the manufacturer's list of interferences for the application. The effect of hemolysis on hsTnT measurements was investigated in cases admitted to the emergency department. METHODS: In our experimental study, 20 patients without hemolysis and hsTnT levels ranging from 15-124 pg/mL were included. Using the same patient's sample with EDTA, the hemolysate was naturally obtained; 1 mL of blood was drawn 50 times via an insulin needle (26 gauge) and poured into a pure (plain) tube, then centrifuged at 2500xg (10 minutes) to collect the supernatant. 300 µL of the sample was taken and 10, 25, 40 µL of hemolysate was added, three different levels of the mixture (level-1, level-2, level-3) were kept for each patient. In hemolysate subgroups, hsTnT was analyzed once and HI values were recorded by photometric method. RESULTS: The median value of hsTnT in pre-hemolysis samples was 0.032 (IQR: 0.021-0.067). All %bias data were found <10 at level-1, >10 at level-2 and level-3. The HI range was found to be 88-204 at level-1, 252-445 at level-2, and 447-693 at level-3. The minimum HI (at 27 pg/mL hsTnT level) with an 11% change in level-2 was determined as 252. CONCLUSIONS: To exclude cases without acute coronary syndrome, the HI of the Cobas 8000 system was considered to be 250 mg/dL, as results with clinically significant (>10%) reductions may threaten patient safety
**Keywords:** Troponin, interference, hemolysis, serum index

**S-153**
**AWARENESS EVALUATION OF THE RATIONAL LABORATORY USE PROJECT IN VAN PROVINCE TERTIARY UNIVERSITY HOSPITAL**

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BACKGROUND AND AIM: Our Ministry carries out the "Rational Laboratory Use Project" in medical laboratories. Within the scope of the related Project, there are the objectives of ensuring the correct diagnosis of the patient, increasing the clinical usefulness of the test results, standardizing the test result reports produced in the medical laboratory, preventing unnecessary test requests and providing communication and consultation between the clinician and the medical laboratory specialist. METHODS: The questionnaire consisting of 30 questions related to the Rational Laboratory Use Project was applied to the faculty members and assistant physicians of our hospital. The questionnaire was answered by 28 faculty members and 52 assistants. RESULTS: 55% of the participants stated that they did not hear or know about the Rational Use of Laboratory Project, 70% of the consultation procedure within the scope of the project, and 80% of the reflex-reflective test applications in laboratory medicine. 62.5% of the participants stated that the rational test request procedure was beneficial in terms of time and cost, and 52.5% stated that they tried to make their requests in accordance with the procedure. 77.5% of the participants stated that they should cooperate with the laboratory in order for the applications within the scope of the project to be more effective and efficient, and 82.5% said that the panel, symposium, etc. reported that activities should be done. CONCLUSIONS: The importance of effective communication between laboratory specialists and clinicians is obvious in order to increase the effectiveness of the practices in the Rational Use of Laboratory Project. Regular meetings and scientific events should be organized within the scope of the Project so that laboratory specialists and clinicians can contribute more to the process. In addition, we believe that it would be beneficial to include rational laboratory use in undergraduate medical education in order to create early awareness in clinicians.
**Keywords:** Rational laboratory, consultation, reflex and reflective testing

**S-154**
**EVALUATION OF LABORATORY PANIC VALUE REPORTING EFFICIENCY IN VAN PROVINCE TERTIARY UNIVERSITY HOSPITAL**

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BACKGROUND AND AIM: The Critical/Panic value is a laboratory result that poses a risk to the patient's life and also represents a pathophysiological condition. According to the literature, 95% of clinicians think that reporting panic value results is beneficial in the decision-making process for patient management and diagnosis. Panic value reporting is also important for laboratory quality management. The aim of this study is to investigate the effectiveness of panic values reported by Van Yuzuncu Yil University Dursun Odabas Medical Center Biochemistry Laboratory, a tertiary healthcare institution, in terms of clinicians. METHODS: The questionnaire consisting of 20 questions about the way of giving information about the panic value and the reporting process was applied to the faculty members and assistant clinicians of our hospital. The questionnaire was answered by 42 faculty members and 56 assistants. RESULTS: 97.9% of the participants thought that panic value reporting was necessary. 74.5% of the participants stated that panic value reporting is useful in diagnosis and treatment. In addition, 61.7% thought that panic value reporting reduced mortality and morbidity. 46.8% of the participants thought that panic value notification would be more effective by phone call, 34% via text message and 19.1% via hospital information management system. Is reporting only panic/critical value sufficient for you? 36.2% of the participants answered yes, 31.9% partly and 31.9% no. CONCLUSIONS: We believe that different communication channels should be used in order to increase the effectiveness of a reported panic value, and the reported result and the comment of the laboratory supervisor will be effective for clinicians in the patient management, diagnosis, treatment and decision-making process.
**Keywords:** Panic value, hospital information management system, quality management

**S-155**
**RELATIONSHIP BETWEEN BRUCELLOSIS AND VITAMIN D, FERRITIN, FOLIC ACID**

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BACKGROUND AND AIM: Brucellosis, which is the most common in our country; It is a zoonotic disease transmitted to humans from animals such as cattle, sheep and goats and their products (milk, cheese, etc.). The aim of this study is to compare the Vitamin D, Ferritin, Folic acid levels of healthy people and people diagnosed with Brucella disease. METHODS: The study included 50 people diagnosed with Brucella disease and 25 healthy controls. Serum obtained from the blood taken after centrifugation, and Vitamin D, Ferritin and Folic acid levels were studied in an autoanalyzer device. Data were analyzed via SPSS 21.00 for Windows. Mean ± standard deviation (SD), Mann-Whitney U test and chi-square test were used for statistical analysis. p value less than 0.05 was considered statistically significant. RESULTS: The mean age±SD values of Patient and Control groups were 39.9±17.7 and 35.8±8.95, respectively. Ferritin values of the patient group (3129±2149.1) were significantly lower than those of the control group (3962.0±2937.2) ($p<0.05$). Although the Folic acid (589.2±455.1) values of the patient group were lower than the Folic acid (611.2±313.94) values of the control group, it was insignificant ($p>0.05$). However, the Vitamin D (1271.8±1011.5) values of the Patient group were significantly higher than the Vitamin D (678.9±597.0) values of the Control group. ($p<0.05$). CONCLUSIONS: : In this study, while Ferritin values were higher in Brucellosis patients, Vitamin D values were found to be significantly lower. These results suggest that vitamin D and Ferritin may play a role in the pathogenesis of the disease in brucellosis patients.
**Keywords:** brucellosis, Vitamin D, Ferritin, Folic acid

**S-156**
**THE RELATIONSHIP BETWEEN FASTING BLOOD GLUCOSE LEVEL AND INTRA-ERYTHROCYTE ANTIOXIDANT AND SELENIUM LEVELS IN TYPE I AND TYPE II DIABETICS**

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BACKGROUND AND AIM: Diabetes Mellitus (DM) is a metabolic disease characterized by insulin deficiency or insulin ineffectiveness resulting from impaired insulin synthesis. Constantly high blood glucose levels cause the formation of free radicals. The aim of this study is to examine the relationships between DM and blood glucose, antioxidants and selenium levels. METHODS: In patients with Type I (n=30) and Type II (n=70) Diabetes Mellitus, blood glucose levels, SOD, CAT, GSH-Px activities were determined by spectrophotometric measurement. Selenium (Se) level was measured in serum by ICP-MS device and the results were compared with control groups (n=20, n=30). RESULTS: In patients with type I DM (n=30), blood glucose levels and GSH-Px were found to be significantly higher when compared to the control group ($p< 0.05$). No statistically significant difference was found in SOD, CAT and Se levels. When compared with the control group, patients with type II DM (n=70) had significantly higher blood glucose levels and significantly lower SOD, CAT, GSH-Px and Se values ($p< 0.05$). CONCLUSIONS: Hem Tip I DM'de hem de Tip II DM'de artan glukoz seviyesinin, serbest radikallerin meydana gelme mekanizmalarini aktive ettigi ve serbest radikallerin ortadan kaldirilmasini saglayan antioksidan savunma sisteminin aktivasyonuna neden olabilecegi kanisini ortaya koymaktadir.
**Keywords:** Antioxidants, Diabetes Mellitus, Oxidative stress, Free radicals, Selenium

**S-157**
**THE RELATIONSHIP BETWEEN SERUM PLASMINOGEN ACTIVATOR INHIBITOR-1 LEVELS AND THE COURSE OF DISEASE AND OTHER BIOCHEMICAL PARAMETERS IN PATIENTS WITH COVID-19**

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BACKGROUND AND AIM: Studies have shown that fibrinolysis activity is insufficient in COVID-19 patients. Plasminogen Activator Inhibitor-1 (PAI-1) is an important antifibrinolytic molecule that plays a key role in the fibrinolytic system. In our study; we aimed to evaluate serum PAI-1 and other biochemical parameters of COVID-19 patients in terms of disease course and mortality. METHODS: 40 COVID-19 patients hospitalized in the service and intensive care unit of our hospital October and December 2020 and 20 healthy volunteers were included in our study. The patients were grouped as those who transferred to the intensive care unit from the service and transferred to the service from the intensive care unit. The values of the same patients in both the service and the ICU analyzed by SPSS. RESULTS: The PAI-1 levels of the patients in the intensive care unit were significantly higher than the levels of the same patients in the service and the healthy control group ($p <.0001$). The IL-6, ferritin, d-dimer levels of the same patients in the intensive care unit were significantly higher than their levels in the service and the healthy control group ($p <.0001$). A positive correlation was found between initial serum PAI-1 and d-dimer levels in the service ($p=0.039$) and between ferritin and IL-6 levels ($p=0.031$) of patients hospitalized in the intensive care unit. CONCLUSIONS: In our study, we found that with the increase in mortality in COVID-19 patients, PAI-1 levels increased significantly and decreased in patients whose clinics recovered; we also found that these values correlated with ferritin, IL-6, and d-dimer levels. Our study is one of the first studies to prospectively analyze PAI-1 levels with important biochemical parameters in COVID-19 patients. More studies are needed to elucidate the mechanism between COVID-19 and the plasminogen pathway.
**Keywords:** COVID-19, fibrinolysis, PAI-1, biochemical, mortality

**S-158**
**EVALUATION OF HEMATOLOGIC INDICES FOR DISCRIMINATION BETWEEN BETA THALASSEMIA TRAIT AND IRON DEFICIENCY ANEMIA**

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BACKGROUND AND AIM: Thalassemia is one of the most common genetic disease causing health problems worldwide. Therefore, several simple screening indices have been developed for differentiating between thalassemia trait and iron defiency anemia. The aim of this study was to assess the discrimination indices in beta thalassemia trait. METHODS: The parameters of complete blood count (CBC) were retrospectively screened in 100 subjects (46 males and 54 females) with beta thalassemia trait who were detected by hemoglobin variant analysis, in 60 subjects (10 males and 50 females) with iron defiency anemia. England&Fraser (EF), Green&King (GK), Mentzer (M), Shine&Lal (SL), Srivastava (S), Red Cell Distribution Width (RDWI), Ricerca (R), Ehsani (E) and Sirdah (Si) indices were determined. RESULTS: Sensitivity and specificity percentages of erythrocyte indices to distinguish beta thalassemia trait from iron deficiency anemia were determined as EF 69% and 98.3%, GK 71% and 98.3%, M 93% and 95%, SL 97% and 60%, S 86% and 96.6%, RDWI 93% and 88.3%, R 94% and 45%, E 91% and 96.6%, Si 80% and 96.6%, respectively. CONCLUSIONS: The molecular diagnosis and prenatal detection for families at risk are important because of the difficulties of treatment in thalassemia. The use of discrimination indices may be valuable to distinguish beta thalassemia trait from iron defiency anemia when the equipment of molecular diagnosis is limited. In our study, the Ehsani, Mentzer, RDWI and Srivastava indices had more useful results than the others in differentiating beta thalassemia trait. Large population studies of indices may increase success in approaching the correct diagnosis.
**Keywords:** Beta thalassemia trait, iron defiency anemia, erythrocyte indices

**S-159**
**HYPERCOAGULANT EFFECTS OF UDP VIA LEUKOCYTES**

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BACKGROUND AND AIM: P2Y12 receptor is stimulated by ADP and, platelets are activated. This receptor has been shown to be inhibited by UTP. It has been shown that UDP plays a role in platelet-leukocyte interaction via P2Y14 receptor and has no effect on hemostasis. Effects of uridine nucleotides on hemostasis via different purinergic receptors are not yet fully known. METHODS: Blood samples from volunteers, as whole blood and platelet-rich plasma (PRP), were used in experiments to investigate the role of UDP and UTP in hemostasis. Platelet aggregation tests showed that UTP and UDP inhibited ADP-induced platelet aggregation. RESULTS: Thromboelastogram experiments were performed in whole blood. While UTP showed a hypocoagulant effect as if supporting the finding in aggregation, UDP showed a hypercoagulant effect on the contrary. In thromboelastogram experiments with PRP, both UTP and UDP showed hypocoagulant effect. CONCLUSIONS: Based on UTP antagonism of P2Y12 receptors, both its inhibition in aggregometry and thromboelastogram can be understood. Inhibition of ADP-induced platelet aggregation by UDP in the aggregometer can be considered through P2Y12 antagonism. Experiments with PRP in the thromboelastogram support this finding. However, hypercoagulant effect of UDP in whole blood on thromboelastogram can be explained through P2Y14 receptors. It is known that UDP also stimulates P2Y6 and P2Y14 receptors on leukocytes. Stimulation of these receptors increases leukocyte chemotaxis and NET formation. The occurrence of platelet-leukocyte interaction by activating P2Y14 receptors with UDP may explain the hypercoagulant effect. UDP exerts its hypercoagulant effect in whole blood through the platelet-leukocyte interaction and may be important in prothrombotic processes.
**Keywords:** Leukocytes, Thromboelastography, Platelets, UDP, UTP

**S-160**
**EVALUATION OF LUPUS ANTICOAGULANT POSITIVITY IN COVID-19 PATIENTS**

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BACKGROUND AND AIM: Anticoagulant treatment reduces mortality rates in COVID-19 patients. aPTT is measured to be prolonged in many Covid-19 patients and is associated with the presence of lupus anticoagulant (LA). Our aim in the study is to emphasize that LA should be considered in

the evaluation of anticoagulant therapy and prolonged aPTT status due to the increased risk of thrombosis in LA-positive with COVID-19 patients. METHODS: Patients who LA test performed between November-2020 and April-2021 were grouped as positive and negative according to the COVID-19 PCR test results. Confirmed COVID-19 patients were evaluated for thromboembolic event and thrombosis laboratory. The data were obtained retrospectively from the laboratory information management system. RESULTS: The LA test of 806 patients were performed during the time interval, and 52 patients also confirmed positive COVID-19 PCR results. While LA was positive in 25% of PCR (-) patients, this rate increased to 50% in COVID-19 patients (p=0.003). Also, mean prothrombin time and aPTT were measured to be prolonged in LA positive COVID-19 patients compared to those with PCR(-) (p=0.02). Although thrombosis was observed in the COVID-19 group with LA positivity, no thromboembolic event was found in the negative group, but this situation is not statistically significant. CONCLUSIONS: LA positivity is associated with an increased risk of thrombosis. We recommend adding the LA test to the coagulation panel and using it especially for patients with high aPTT values in the follow-up of the disease against the increased risk of thrombosis.
**Keywords:** aPTT, COVID-19, D-dimer, Lupus anticoagulant, Thrombosis,

**S-161**
**INVESTIGATION OF THE CORRELATION OF INTERLEUKIN 6 AND C–REACTIVE PROTEIN IN THE FOLLOW-UP OF COVID-19 POSITIVE PATIENTS**

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BACKGROUND AND AIM: COVID-19 caused by SARS-CoV2 causes severe acute respiratory syndrome. The inflammatory response plays a critical role, and the cytokine storm increases the severity. In our study, we aimed to evaluate the relationship between interleukin-6 (IL-6) and C-reactive protein (CRP) results in patients diagnosed with COVID-19 by polymerase chain reaction (PCR). METHODS: Data of 52 patients diagnosed with COVID-19 between 2019 and 2020 were evaluated retrospectively. Healthy individuals (n=35) were included in the control group. IL-6 was measured by ELISA method (DSX System, Dynex Technology INC, USA), CRP was measured by turbidimetric method (AU680, Beckman Coulter Ltd, Ireland). Statistical analyzes were performed with SPSS Statistics (IBM Corporation, Somers, NY) software version 17. RESULTS: Outliers were excluded by the Box-Plot plot method. It was observed that CRP and IL-6 parameters did not have normal distribution by Shapiro-Wilk and Kolmogorov-Smirnov methods. Median and interquartile range values were calculated. While a statistically significant difference was found between the mean of the patient and control groups for CRP ($p<0.001$), there was no significant difference between the patient and control groups for IL-6 (p=0.249). A moderate linear relationship was found between IL-6 and CRP by correlation test (r=0.636). CONCLUSIONS: While there was a significant difference in CRP between the patient and control groups, no significant difference was found in IL-6. In line with the data, it is thought that CRP is more diagnostically significant compared to IL-6 in the follow-up of COVID-19, but further studies with large patient groups are recommended.
**Keywords:** C–reactive protein, COVID-19, Interleukin 6

**S-162**
**EVALUATION OF PREANALYTIC PROCESS OF BLOOD SAMPLES SENT TO BIOCHEMISTRY LABORATORY IN SANLIURFA MEHMET AKIF INAN EDUCATION AND RESEARCH HOSPITAL**

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BACKGROUND AND AIM: In this study, it was aimed to evaluate the preanalytical process in our hospital and to create corrective actions by examining all the steps before analysis of the blood samples sent to the Medical Biochemistry laboratory of our hospital for 1 day. METHODS: In this study, one of the pre-analysis steps of the blood samples sent to the laboratory; Blood collection procedure stages; Blood Collection Equipment and Storage Conditions, Identification of Patient and Sample Identification Information, Infection Control Procedures, Blood Collection Technique, Health Professional Safety and Laboratory workflow stages; Sample Acceptance and Tube Barcoding, Transfer Time, Centrifugation Process were evaluated. RESULTS: Blood collection equipment used in the blood collection and services were stored under appropriate conditions and there were no expiration problems. Patient identity verification was not performed in 13% of cases. Performing blood collection by wearing gloves 87%, applying the correct disinfection procedure in the blood collection process 15%, using disposable holders 99%, mixing the blood taken into the tubes by turning it upside down 7%, correct waste management practice of the personnel who take blood 5% rate was detected. 0.34% of the blood samples coming to the laboratory were found to be inappropriate samples. The time from sample collection to laboratory, from laboratory to centrifugation and from centrifugation to analysis was determined as 13, 4 and 12 minutes, respectively. CONCLUSIONS: Since laboratory errors may have negative effects on patient diagnosis and treatment, preanalytical errors were observed for blood collection and laboratory personnel, and repetitive training programs were planned on these issues
**Keywords:** Clinical laboratory, preanalytical error, laboratory workflow

**S-163**
**EARLY GROWTH RESPONSE PROTEIN (EGR) LEVELS IN PATIENTS WITH FIBROMYALGIA SYNDROME**

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BACKGROUND AND AIM: The aim of this study is to compare the relationship between EGR1, EGR2 and EGR3 protein levels belonging to the Early Growth Response (EGR) protein family, in patients with fibromyalgia syndrome (FMS) and healthy control group plasma. METHODS: The current study included 76 FMS patients who were newly diagnosed with primary FMS at Sivas Cumhuriyet University, Department of Physical Medicine and Rehabilitation according to the 2010 American College of Rheumatology criteria and 78 healthy volunteers. Venous blood samples were taken from both groups to measure plasma EGR1, EGR2, and EGR3 levels. These protein levels were determined using ELISA methods. Independent Student-t test was applied when statistical parametric test assumptions were met. The data obtained were compared with the two independent groups in terms of the significance test of the difference between the two groups. Also, sensitivity, specificity and AUC values were calculated using the ROC curve. RESULTS: When the plasma EGR1 protein levels of the FMS and control groups were compared, a statistically significant difference was found (p=0.001). CONCLUSIONS: EGR1 protein levels in patients with FMS were lower than in the control group. EGR1 protein level may be important in diagnosing this disease. Also, EGR1 protein may be biomarker in FMS.
**Keywords:** Fibromyalgia syndrome, Early Growth Response (EGR) proteins, EGR1, EGR2, EGR3

**S-164**
**EVALUATION OF SOME BIOCHEMISTRY AND HEMOGRAM PARAMETERS THAT CAN BE USED IN THE DIAGNOSIS OF COVID-19**

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BACKGROUND AND AIM: The COVID-19 pandemic has been devastating the world since its inception. Routine parameters used in the diagnosis and treatment process can be a potential biomarker for the prognosis of this inflammatory disease. In our study, it was aimed to compare some hemogram and biochemical parameters according to the need for intensive care (ICU) of laboratory-confirmed PCR (+) patients and to evaluate their potential role in determining the prognosis of the disease. METHODS: A total of 255 patients, who were diagnosed with COVID-19 by PCR test in Konya Selcuk University Faculty of Medicine hospital between April and December 2020, 62 of whom were in the ICU and 193 of them were treated for COVID-19 in the service, were included in the study. RESULTS: Considering the demographic and clinical findings of the patients, the mean age of the patients entering the ED was higher (64.65 ± 14.14 vs. 54.65 ± 17.43, $p<0.001$, respectively) and their saturation was lower (83.56±5.45 vs. 93.05±4.27, $p<0.001$, respectively). Those entering the ICU were mostly men (64.5% vs. 35.5%, p=0.036) and those with comorbidities (85.5% vs. 14.5%, $p<0.001$). All of them had Thorax CT involvement (n=62, 100%) and 53.2% were ex. WBC, troponin, procalcitonin, ferritin, D-dimer, CRP, LDH, fibrinogen, neutrophil, platelet/lymphocyte ratio (PLR), neutrophil/lymphocyte ratio (NLR) and monocyte/lymphocyte ratio (MLR) of patients entering ICU were significantly high, lymphocyte value was low. On the other hand, there was no significant difference between the platelet and monocytes values of the patients who entered the ICU and those who did not (p=0.526 and p=0.123). When the results obtained by adjusting the patients' age, gender and comorbidities were analyzed, it was observed that the procalcitonin value lost its significance (p=0.480,

p=0.529, and p=0.758). Similarly, it was observed that troponin, fibrinogen, and MLR lost significance when corrected (p=0.108, p=0.080, and p=0.124). CONCLUSIONS: It has been observed that in addition to the ferritin, D-dimer, CRP, LDH tests that are routinely used together with the PCR test in the diagnosis and follow-up of COVID-19, neutrophils, PLR and NLR can also be helpful, they are significant in those who need ICU, and procalcitonin measurement is not required.
**Keywords:** COVID-19, biomarker, hemogram, NLR, PLR.

**S-165**
**SERUM CHEMERIN AND Sfrp5 LEVELS IN PATIENTS WITH SUBCLINICAL HYPOTHYROIDISM**

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BACKGROUND AND AIM: Clinical studies reveal changes in the levels of some adipokines that accompany thyroid disorders. Chemerin and Sfrp5 are new adipokines and their relationship with thyroid hormones is not clearly known. In this study, the relationship of chemerin and Sfrp5 with subclinical hypothyroidism and metabolic syndrome parameters were investigated. METHODS: Serum chemerin, Sfrp5, LDL, total cholesterol, triglyceride, HDL, insulin, glucose, HOMA-IR, systolic-diastolic blood pressure, waist circumference and BMI were measured in 46 famale patients who were diagnosed with subclinical hypothyroidism but did not start treatment, and 49 healthy famale control groups applying to the Endocrinology and Metabolism Unit of Ondokuz Mayis University Medical Faculty Hospital between June 2020-April 2021. RESULTS: Although serum chemerin levels were higher and Sfrp5 levels were lower in the subclinical hypothyroid patient group compared to the healthy control group, no statistical difference was found. When both the subclinical hypothyroidism group and the study group were evaluated in total, a positive correlation was obtained between chemerin and the Sfrp5 level, and it was found to be statistically significant. When other parameters were examined, no significant difference was found between the groups. CONCLUSIONS: The fact that proinflammatory chemerin protein is high and anti-inflammatory Sfrp5 protein is low in subclinical hypothyroidism suggests that these two proteins may be associated with the disease. Since the patients participating in the study had mild subclinical hypothyroidism, there was no statistical difference and it shows that the inflammation is not advanced. The positive correlation between the two proteins shows that a reason/result relationship can be found.
**Keywords:** Chemerin, Sfrp5, Subclinical Hypothyroidism

**S-166**
**COMPATIBILITY OF GLUCOSE/POTASIUM RATIO WITH OGTT IN DIAGNOSIS OF DIABETES**

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BACKGROUND AND AIM: In the diagnosis of diabetes mellitus (DM), traditional diagnostic methods are Fasting Plasma Glucose (APG) and Oral Glucose Tolerance Test (OGTT). In this study, it was investigated whether the serum Glucose Potassium (Glu/K+) ratio has a diagnostic value in DM patients. METHODS: The data of 580 patients aged between 18 and 80 who came from the Endocrinology Outpatient Clinic between 01.01.2020 and 01.08.2021 were analyzed retrospectively. According to the FPG and OGTT results, 4 groups were formed: Control (n=295), Impaired Fasting Glucose (IFG) (n=140), Impaired Glucose Tolerance (IGT) (n=103) and DM (n=42), FBG, 2nd hour Postprandial Blood Glucose (OGTT result), Glu/K+, HbA1c were compared between the groups. The Kruskal Wallis Test was used to compare the groups and the Spearman correlation coefficient was used in the analysis of the relationship between the parameters. ROC analysis was performed for Glu/K+. RESULTS: The median Glu/K+ ratio was in the Control, IFG, IGT and DM groups, respectively; 19.76; 23.22; 24.04; 27.39. While there was no difference between IFG and IGT groups, there was a significant difference between all other groups (p <0.001). Glu/K+ ratio was correlated with 2nd hour Postprandial Blood Glucose and HbA1c. In the ROC analysis based on those diagnosed with DM by OGTT, the best cut-off point for Glu/K+ ratio was 23.30; its sensitivity is 95.2%; specificity was 98.3%. CONCLUSIONS: The cutoff value of 23.30 for Glu/K+ ratio showed a very specific and statistically significant agreement in detecting DM.
**Keywords:** Diabetes, Glucose, Potassium.

**S-167**
**EXAMINATION OF THE RELATIONSHIP BETWEEN CORTISOL LEVELS AND SODIUM, POTASSIUM, CHLORINE, AND GLUCOSE LEVELS**

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BACKGROUND AND AIM: Cortisol, secreted from the adrenal gland and synthesized from cholesterol, is the main glucocorticoid hormone and is important for maintaining homeostasis. Cortisol, also called the stress hormone, acts on various physiological processes such as blood pressure, glucose levels, immunity, central nervous system activation, and carbohydrate metabolism. This study aimed to examine the relationship between cortisol levels and sodium, potassium, chloride, and glucose levels. METHODS: 371 patients aged between 18-65 years who applied to Nigde Omer Halisdemir University Training and Research Hospital between 01.01.2019 and 31.01.2020 were retrospectively screened and included in the study. Of these patients, 47.9% (178/371) were women and 52.1% (193/371) were men. Serum cortisol, sodium, potassium, and chlorine values were scanned from the blood samples taken from the patients at the same time, and they were included in the study. Serum cortisol levels were analyzed by ECLIA (electrochemical luminescence assay) method in Roche Cobas e801 (Roche Diagnostic, Germany) hormone devise, while serum sodium, potassium, and chlorine levels were analyzed by ISE (indirect ion-selective electrode) method by Roche Cobas c701 (Roche Diagnostic, Germany). At the same time, the serum index panel was examined for each patient, and patients with hemolysis, lipemia, and icterus at a level that would affect the tests were excluded from the study. RESULTS: According to our results, there is a negative correlation between cortisol and sodium and chlorine (r:-0.327 p<0.01, r.-0.153 p0.05, respectively) and a positive correlation between cortisol and potassium and glucose (r:0.182 p0.01, r:0.144 p=0,05, respectively). CONCLUSIONS: One of the limitations of our study is that we could not make a comparison by dividing them into groups according to the diagnoses since the clinical pre-diagnosis or definitive diagnosis of all patients was not known exactly. We think that the definite diagnoses of the patients should be known and should be supported by studies to be carried out in different patient groups.
**Keywords:** Cortisol, glucose, sodium, potassium, chlorine

**S-168**
**COMPARISON OF THE TRIGLYCERIDE- GLUCOSE INDEX AS AN ALTERNATIVE MARKER FOR INSULIN RESISTANCE IN OBESE WOMEN**

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BACKGROUND AND AIM: Recent studies have also widely used the triglyceride-glucose index (TyG) as a tool for insulin resistance. The TyG index calculated from fasting plasma glucose and triglyceride tests is a new index. In this study, we aimed to investigate the relationship between the TyG index and the estimated insulin resistance index in the prediction of insulin resistance (IR) among obese woman. METHODS: This study was conducted retrospectively in obese women aged 18-60 years [Obese individuals (30 patients) with a HOMA-IR index <2.5 were considered as controls]. Clinical data were collected from patient records. These included demographic data (age, weight, height, BMI (body mass index), waist-hip ratio, period of being overweight, body fatty ratio), medical history, and laboratory indicators. The venous blood samples were 8 h collected after overnight fasting. Routine biochemical parameters including lipids, glucose, HbA1C, hepatic and renal function were assayed using COBAS 8000 system of Roche diagnostic (Roche Diagnostics GmbH, Mannheim, Germany). We calculated TyG, HOMA-IR (Homeostatic Model Assessment of Insulin Resistance), GIR (glucose to insulin ratio), and QUICKI (quantitative insulin sensitivity check index) index. Persons diagnosed with a chronic disease and diabetes were excluded from the study. Statistical analyzes were performed using SPSS 20.0 (IBM, USA). RESULTS: A total of 75 participants with a mean age of 46.04± 7.72 years were included in this study. BMI was estimated as 37.1± 6.1. The mean of TyG, HOMA-IR, GIR, and QUICKI index were determined as 8.8± 0.5, 3.5± 1.8, 9.2± 3.5, and 0.48± 0.09 and respectively. The TyG index showed a positive correlation with HOMA-IR and a negative correlation with the GI and QUICKI index. The area under the receiver operating characteristic (ROC) curve of the TyG index (cut off: 8.65) was 0.777, indicating good sensitivity (79.4%) and specificity (67.4%). CONCLUSIONS: The TyG index is a simple and cost-effective marker that can be used instead of HOMA-IR in the determination of IR in Turkish obese women. It can also be used in insulin resistance studies due to its good availability.
**Keywords:** Homa, Insulin resistance, Obese, Triglyceride- glucose index

**S-169**
**MAY BLOOD GROUPS AFFECT COVID-19 SENSITIVITY?**

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BACKGROUND AND AIM: Many studies have investigated whether A, B, and 0 blood groups are associated with COVID-19. In some of these studies, the relationship between these blood groups and COVID-19 susceptibility has been shown. Our study aimed to investigate whether there is a relationship between COVID-19 infection and AB0 blood groups. METHODS: 1000 patients who applied to Erbaa State Hospital between April 1, 2020, and April 1, 2021, and were diagnosed with COVID-19 were included in our study. The patients were evaluated retrospectively based on their blood group, gender, age, intensive care unit admission, intubation status, mortality, and having mutant variants. RESULTS: A blood group was the most common group in COVID-19 patients with 39.1%. Next was 0 (33.2%), B (16.1%), and AB (11.6%). A blood group was statistically significantly higher in COVID-19 patients compared to the healthy control group (32.3%) (p=0.004). The O blood group was significantly lower in COVID-19 patients than the control group (39.7%) (p=0.006). There was no significant difference between the groups in terms of Rh positivity and negativity. The mortality rate in COVID-19 patients was found to be 12.7%. The mortality rate was significantly higher in the 0 blood group than in the A blood group (OR=1.587, p=0.02). CONCLUSIONS: According to the results of our study, individuals with 0 blood group have a lower risk of contracting COVID-19 disease, but the mortality rate is higher. Individuals with the A blood group are more susceptible to COVID-19. Multicenter and more comprehensive studies are needed to better understand the prognostic and diagnostic importance of blood groups.
**Keywords:** COVID-19, Blood Groups, Susceptibility

**S-170**
**INVESTIGATION OF PROGNOSTIC INDICATORS IN PATIENTS WITH COVID 19**

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OBJECTIVES: The aim was to evaluate the prognostic role of D-dimer, procalcitonin (PCT), ischemia modified albumin (IMA) total thiol and lymphocyte% in patients with COVID-19. MATERIALS-METHODS: Total of 80 patients with COVID-19, confirmed with reverse transcriptase polymerase chain reaction between September and October 2020 were included in the study. The patients with COVID-19 hospitalized in the service or intensive care unit were devided into critical and non-critical according to the criteria found in the World Health Organization interim guidelines. D-dimer, PCT, IMA, total thiol levels and lymphocyte% were determined and compared groups. Receiver-operating characteristic curves (ROC) were used to detect an optimal cut-off value for discrimination. RESULTS: D-dimer and PCT levels were found to be significantly higher (p<0.001 and p=0.032, respectively); total thiol levels and lymphocyte% were significantly lower (p=0.026 and p<0.001, respectively) in critical patients with COVID-19 than those non-critical. We determined a cut-off value of 790 µg/L for D-dimer (82.6% sensitivity; 70% specificity; Area Under Curve (AUC): 0.827; p<0.001), 8.9 for lymphocyte% (74% sensitivity; 79% specificity; AUC: 0.839; p<0.001) and 211 µmol/L for total thiol (91.3% sensitivity; 47.4% specificity; AUC: 0.699; p=0.003) via ROC analysis. CONCLUSION: We can say that the performance of D-dimer and lymphocyte% as prognostic factors is good and total thiol levels have limited discriminating power for COVID-19 disease.
**Keywords:** covid-19, d-dimer, prognosis, tiol

**S-171**
**EVALUATION OF LABORATORY TESTING PROCESS DURING THE COVID-19 PANDEMIC**

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BACKGROUND AND AIM: Various laboratory processes have been defined in laboratories to ensure patient safety, reduce errors, provide accurate, and reliable results. The COVID-19 pandemic has also caused unexpected changes in preanalytical, analytical and postanalytical processes, as well as altering all the rules of the health system. The aim of our study is to analyze the effect of intense working conditions on the total test process (TTP) in the laboratories caused by pandemic. METHODS: Between September 2019 and August 2021, the TTP was evaluated in detail by examining the sources of preanalytical error in a total of 4 periods. 4 periods consist of three separate periods of 18 months after onset of the pandemic and the first 6 months before the pandemic. RESULTS: When 4 periods were compared, the higest sigma value of rejected samples was determined in pre-pandemic period ( 4.4σ, 4.3 σ, 4.1σ and 4.2σ chronologically). There was a statistically significant difference between periods in sample rejection rates (p=0.003). Rejection numbers of insufficient and hemolyzed samples were significantly difference, while there was no a statistically difference in rejection numbers of wrong tube draw or clotted samples between the periods (p = 0.023, p=0.001, p > 0.05 and p>0.05 respectively). CONCLUSIONS: Various factors such as the use of personal protective equipment, flexible working order, insufficient number of personnel, and increased intensity have significant impact on TTP. Our data show that corrective steps are needed during the pandemic and the new process needs to be evaluated.
**Keywords:** Covid-19, Total Test Process, Pre-Analytical Error, Sample Rejection Criterias.

**S-172**
**THE ROLES OF BUN/D-DIMER AND BUN/LACTATE RATIOS IN INDICATING MORTALITY IN INTENSIVE CARE PATIENTS WITH COVID-19**

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BACKGROUND AND AIM: The 2019 coronavirus disease (COVID-19) is an epidemic disease with variable symptoms and high mortality rates. Therefore, patient follow-up is very significant. We also investigated whether blood urea nitrogen (BUN), D-dimer and lactate parameters, which laboratory tests used in follow-up, predict mortality. METHODS: 173 COVID-19 patients hospitalized in the pandemic intensive care unit within the period from March to June 2020 were included in the study. Retrospectively, we recorded the patient's age, gender, comorbidity, radiological involvement, oxygen demand, APACHE scores, in-hospital mortality status, BUN, lactate, and D-dimer levels, BUN/D-dimer ratio (BDR), BUN/lactate ratio (BLR). Then we made the statistical comparison between the groups by grouping the patients as discharged and deceased. RESULTS: Of the patients included in the study, 107 (61.8%) were male and 66 (38.2%) were female. The mean ages between those discharged and those who died in the hospital are 73 and 67.5 years, respectively, and there is a statistically significant difference. The median BUN, d-dimer, lactate and BDR, BLR values of the patients in the survivor group were significantly higher than those in the survivor group. BUN: 38 [25-60] and 23 [14–34] [p < 0.001], respectively; Lactate: 1.81[1.3-2.7] and 1.56 [1.2-1.9] [p < 0.05], respectively; D-dimer: 2430 [1401-4300] and 1710 [965-4204] [p < 0.05], respectively; BDR: 0.016 [0.009–0.029] and 0.011 [0.007–0.026] [p < 0.05]);. BLR: 19.24 [10.38-30.99] and 14.15 [8.79–22.92] [p < 0.05], respectively). In estimating in-hospital COVID-19 mortality, the area under the curve (AUC) for BUN was the highest (0.74), and the diagnostic odds ratio was the highest for BLR (25.03) CONCLUSIONS: We found that BUN, BDR, and BLR levels were reliable predictors of in-hospital mortality in COVID-19 patients. However, BLR was a potent risk assessment tool, especially in defining the risk of in-hospital death.
**Keywords:** COVID-19, Lactate, Blood Urea Nitrogen, D-Dimer, mortality

**S-173**
**PROGNOSTIC AND DIAGNOSTIC VALUES OF NEUTROPHIL-LYMPHOCYTE COUNT AND PERCENTAGE IN COVID-19 PATIENTS**

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BACKGROUND AND AIM: Markers that predict the need for intensive care unite of COVID-19 patients may reduce disease-related mortality. The aim of study is to evaluate diagnostic value of neutrophil-lymphocyte count and percentage in predicting intensive care requirement and mortality. METHODS: The study included 141 patients followed-up/treated for COVID-19 in Sivas Numune Hospital and 63 healthy controls. In the patient group, 65 people were treated as outpatients but, 76 patients needed intensive care. 30 of patients in intensive care unite did not survive. Blood count, CRP, and ferritin values were obtained retrospectively. Performance of markers in predicting the need for intensive care was evaluated by regression analysis and ROC curves. RESULTS: Lymphocyte count, neutrophil-lymphocyte percentage, CRP and ferritin concentrations showed significant differences for all groups (p<0.05), but there was no difference between intensive care patients and mortal cases. While lymphocyte count and percentage were low in mortal cases, other parameters were higher. In the linear regression analysis, lymphocyte percentage, CRP, and ferritin values were found to have significance in predicting the need for intensive care for patient group (p<0.05). In the ROC analysis, the areas under the curve for these parameters were found to be 0.907, 0.859, and 0.842, respectively. CONCLUSIONS: Since there was no significant difference between intensive care

patients and dead cases, we could not determine a parameter to distinguish between two groups. However, evaluation of lymphocyte percentage, CRP, and ferritin values together can be used to predict intensive care requirements in COVID-19 patients.
**Keywords:** COVID-19, lymphocyte count, mortality and neutrophil count

**S-174**
**EVALUATION OF ANTIBODY LEVELS INDUCED BY SARS-COV-2 INFECTION OR COVID-19 VACCINATION**

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BACKGROUND AND AIM: SARS-CoV-2 has caused a pandemic and COVID-19 challenged both human and public health over the world. Different types of COVID-19 vaccines were developed against the disease virus with various techniques. In this research, it was aimed to evaluate the antibody responses induced by mRNA vaccines and inactivated vaccines or SARS-CoV-2 infection.
METHODS: Between January and August 2021, 651 patients tested for immunoglobulin G antibody levels against the spike protien of SARS-CoV-2. Antibody levels(AU/mL) were detected by Chemiluminescence-Microparticle-Immunoassay, detection was carried on Abbott-Architect ci8200-Autoanalyzer.
RESULTS: Among 651 patients 298 of them were vaccinated without previous COVID-19 history (77 mRNA, 221 inactivated), 123 were infected with SARS-CoV-2 and not vaccinated, 58 were vaccinated after the infection (19 mRNA, 39 inactivated) while 172 of all did not have previous infection or vaccination history. Of 172 patients 29 of them tested positive for anti-Spike antibody levels with a median value of 223.9. Inactivated vaccine induced antibody responses were significantly lower than mRNA vaccine induced levels (p=0.000, median:304.5, 7530.8 respectively). In previously infected population who were not vaccinated; higher antibody levels were observed than inactivated vaccine administred patients (p=0.000, median:737.1, 304.5 respectively), when compared to the patients who received mRNA vaccine antibody levels were found to be lower (p=0.000, median:737.1, 7530.8). Among the patients who were vaccinated after the infection; latterly mRNA vaccine administred patients were found to have higher antibody levels than patients who received inactivated vaccine after the infection (p=0.000, median:12070.4, 1183.9 respectively).
CONCLUSIONS: Higher levels of antibody response were observed in patients who received mRNA vaccine when compared to those who received inactived vaccine or were infected with SARS-CoV-2. The highest levels were observed among patients who were infected then also received mRNA vaccine. This study whose preliminary data were examined should be supported by larger sample groups and longer follow-up with further studies.
**Keywords:** COVID-19, inactived vaccine, mRNA vaccine, SARS-CoV-2

**S-175**
**NANOBIOTECHNOLOGY BASED RESEARCH IN THE LAST DECADE: EVALUATION OF THE RELATED PUBLICATIONS AND PATENTS**

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BACKGROUND AND AIM: Nanotechnology is an interdisciplinary field involving physics, chemistry, biology and engineering. The emergence of the concept took place in 1990s, and today the main point is the design and engineering of functional nanostructured materials at the molecular scale. Development of biosensors for the diagnosis of diseases, drug targeting and controlled release applications, medical implants and imaging techniques, vaccine developments are the top research topics of nanobiotechnology. Here, we provide a critical assessment of the tremendous progress of nanobiotechnology and its medical applications over the last decade in regard to related papers and patents using Statnano and Web of Science (WoS) databases. Turkey's role in the nanobiotechnology field is also discussed as a special example.
METHODS: The research covers the last 10 years (2010-2020) of related published studies and patents. The data is derived bu keyword searches in the StatNano and WoS databases. Statnano is a nonprofit organization established in 2010 to provide the latest information and statistics in nano-based Science, Technology and Industry.
RESULTS: It is apparent that many developed countries give their priority to this field, and nanotechnology research is supported by various funds. The top players in the global market are U.S. (estimated share of $13.2 billion in 2021, China (estimates share of $5.1 billion by 2026), Japan, Canada and Germany. WoS search indicates that China, USA, India, Iran and South Korea are the top five countries with published ISI-indexed articles in 2011-2021. The evaluation of granted patents indicate that US, Germany and South Korea are top countries of patents in the field of nanotechnology. In Turkey, some interest is given to the area, and institutes specific to this field have been established. Nanotechnology is a also topic in Turkish national research priority field program, and scholarship support for graduate students are provided although these are limited. While there were 870 nanotechnology articles with ISI index in Turkey in 2011, this number reached 3,844 in 2020.
CONCLUSIONS: Despite this rapid growth and investments made in the field by start-ups, governments, universities etc. nanobiotechnology is faced with similar challenges of other applied sciences. There is an increasing number of good 'applied' papers however development of successful technologies is not always parallel. Turkey based publications and patents are quitel low compared to countries such as USA, Korea, and China for the time being, and it would wise for the authorities to give the focus and support to this area taking the fact that it has a great potential especially in the health sector.
**Keywords:** nanobiotechnology, biomedical, medicine, nanomaterials

# POSTER PRESENTATION ABSTRACTS

**P-001**
**EVALUATION OF TURNAROUND TIME PERFORMANCES OF BLOOD GAS TESTS**

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BACKGROUND AND AIM: The turnaround time is considered as one of the most important quality indicators in the evaluation of laboratory performance for the laboratory services offered. The International Standards Organization (ISO) 15189 has set requirements for timely test results.Our clinical biochemistry laboratory, accredited with ISO 15189, performs turnaround time performance analysis periodically.In this study, it is aimed to analyze the turnaround time performance of the blood gas test of our laboratory between June 1, 2020 and June 1, 2021 and to determine the corrective and preventive actions to be taken. METHODS: The turnaround time for blood gas tests admitted to our Clinical Biochemistry Laboratory from the emergency department between June 1, 2020 and June 1, 2021 were evaluated.Turnaround time was defined as the time elapsed between the acceptance of the samples to the laboratory and the approval of the test results.The data were obtained retrospectively from the Laboratory Information Management System. Targeted laboratory result time was 20 minutes for blood gas test.The target value in turnaround time performance was determined as 85% and above. RESULTS: Between 1 June 2020 and 1 June 2021, from emergency department, a total of 18,858 tests were accepted and reported in our laboratory.Laboratory turnaround times within the time specified in the blood gas tests were 95.14% (mean 9 minutes), respectively. CONCLUSIONS: The turnaround times for blood gas tests are within target values.It is aimed to reduce the current turnaround times in order to increase the laboratory service performance.In this context, corrective and preventive activities and personnel trainings are planned in the laboratory.
**Keywords:** Turnaround Time, Quality Indicators, Total Testing Process.

**P-002**
**EVALUATION OF THE TOTAL ALLOWABLE ERRORS OF ROUTINE BIOCHEMISTRY TESTS**

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BACKGROUND AND AIM: In this study, we aimed to calculate the total error values of routine biochemistry tests and to evaluate them within the framework of the national criteria determined by the Ministry of Health and Clinical Laboratory Improvement Amendments (CLIA). METHODS: Total error was calculated for albumin, alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), chloride, total cholesterol (TC), glucose, high-density lipoprotein (HDL), lactate dehydrogenase (LDH), potassium, total protein, sodium, triglyceride and urea tests. All these test studied in Cobas 8000, Cobas 6000-1 and Cobas 6000-2 (Roche Diagnostics, Mannheim, Germany) analyzers used in our laboratory. Bias(%) was obtained from external quality control (RIQAS, Randox international quality assessment scheme) data and coefficient of variation (CV) was obtained from internal quality control data studied for 20 consecutive days with 2 levels. Bias (%) was calculated with the formula [ (average value-average peer value)/average peer value]*100; CV was calculated with the formula [(SD/Mean value)]*100. The formula TE=Bias(%)+1,65*CV was used. RESULTS: When the calculated total error were compared with the national criteria, it was found within the determined limits for all three analyzers. In comparison with CLIA criteria, albumin and sodium in cobas 6000-1 analyzer; sodium and urea in the cobas 6000-2; in the cobas 8000 analyzer, albumin, chloride, TC, LDH and sodium tests were found above the allowable TE values. CONCLUSIONS: Although the criteria determined by the Turkish Ministry of Health in terms of ease of use in laboratory are more appropriate, since the CLIA criteria are within narrower limits, it is thought that it will be beneficial in the early detection and intervention of errors.
**Keywords:** Quality management system, total allowable error, analytical performance

**P-003**
**COMPARISON OF LC-MS AND ROUTINE SPECTROPHOTOMETRIC CREATININE MEASUREMENT METHODS AND EVALUATION OF THE EFFECTS ON EGFR CALCULATION**

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BACKGROUND AND AIM: Creatinine levels are important to detect and monitor kidney function thus they should be analyzed with high sensitivity. Therefore, creatinine is a commonly used clinical parameter, yet research on the accuracy of the measurement method remains currently. Limitations in accuracy and precision in creatinine measurement have led to the search for new biomarkers as cystatin C, Beta Trace Protein (BTP) and Symmetric-Dimethyl Arginine (SDMA), as an renal marker as an alternative to creatinine. METHODS: In our study, we determined liquid-chromatography mass spectrometry (LC-MS / MS) measurement method as the reference method for creatinine quantification. After the LC-MS MS creatinine method validation studies performed according to CLSI protocols and studies in the literature, we also compared the results of Jaffe method and enzymatic method with LC-MS/MS creatinine results. We investigated correlation cystatin C, BTP and SDMA levels as an alternative marker with LC MS / MS creatinine measurement method that reference method. We examined the effect of the obtained results on CKD-EPI eGFR calculation. Siemens commercial kit and ADVIA 1800 device were used for routine creatinine analysis, Siemens commercial kit suitable for nephelometric device was used for BTP and Sistain C, and LC-MS/MS was used for SDMA analyzes. RESULTS: At the comparison results, there was a strong correlation between Jaffe Method and enzymatic creatinine method and was obtained consistent results in regression analysis (r2=0.96-0.97). The LOD (Limit of Detection) and LOQ (Limit of Quantitation) results of the validated LC-MS/MS method were obtained as 0.01 mg/dL and 0.04 mg/dL, respectively. GFR values calculated with the combination of cystatin C and cystatin C+creatinine showed a strong correlation with the eGFR values obtained according to LC-MS/MS creatinine data (r2 =0.92 ve 0.95; $p<0.05$). CONCLUSIONS: It is recommended that the methods of the tests, which are important for clinical decision, to be standardized between the laboratories by standard reference materials (SRM) or a reference method. According to all our results, especially LOD and LOQ, we think that our LC–MS/MS method can be suitable for creatinine measurements in pediatric and geriatric patient populations that a sensitive measurement method is needed, with low creatinine levels.
**Keywords:** Creatinine, GFR, LC-MS/MS, Jaffe method, Cystatin C.

**P-004**
**EVALUATION OF IMPRECISION AND REFERENCE CHANGE VALUE OF TUMOR MARKERS ON ROCHE COBAS 8000 ANALYZER**

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BACKGROUND AND AIM: The population-based reference range is the basis for interpreting test results when an individual previous data are not available. However, changes in the individual's serial measurements may be related to the status of the disease as well as being affected by analytical and intra-individual variation. The reference change value (RCV) expresses the clinical significance of the change between two consecutive test results, especially in tests with a low individuality index, laboratory test results exceeding this value are associated with the individual's disease state. In this study, we aimed to calculate our RCV for eight tumor markers (AFP, CA15-3, CA19-9, CA125, CEA, f-PSA, t-PSA and calcitonin) to improve clinical use in our hospital. METHODS: Six-month internal quality control results for serum analytes of AFP, CA15-3, CA19-9, CA125, CEA, f-PSA, t-PSA and calcitonin studied on Cobas 8000 immunochemistry analyzer with Roche reagents in our laboratory were used to calculate the analytical coefficient of variation (CVA). Intra-individual coefficients of variation (CVI) were obtained from median values from meta-analysis studies in the EFLM database of biological variation. RDD was calculated with the formula Z x 2½ x ($CVA^2$ x $CVI^2$)½. (Z=1.96, 95% probability, bidirectional; Z=2.58, 99% probability, bidirectional; Z=1.65, 95% probability, unidirectional; Z=2.33, 99% probability, unidirectional) RESULTS: Analytical coefficients of variation (CVA) were found to be 5.81% for AFP, 3.25% for CA 15-3, 3.74% for CA 19-9, 4.82% for CA 125, 3.78% for CEA, 4.77% for f-PSA, 3.13% for t-PSA and 6.03% for calcitonin. Calculated RCV (Z=1.96, 95% probability, bidirectional) was found to be 75.7% for AFP, 15% for CA15-3, 63.2% for CA19-9, 39.2% for CA125, 50.7% for CEA, 23.7% for f-PSA, 20.8% for t-PSA and 39.7% for calcitonin. CONCLUSIONS: It is important for laboratories to consider analytical and biological sources of variation in order to obtain reliable results. For the change in an individual's serial measurement results to be clinically significant, the change must be greater than the total variation inherent in the results being compared. Reporting RCV alongside the population-based reference range can be used

as a valuable tool in clinical judgment, especially in patients with follow-up.
**Keywords:** reference change value, imprecision, biological variation, tumor markers

**P-005**
**EVALUATION OF THE CORRELATION BETWEEN ERYTHROCYTE SEDIMENTATION RATE AND HEMATOCRIT-CORRECTED ERYTHROCYTE SEDIMENTATION RATE WITH C-REACTIVE PROTEIN**

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BACKGROUND AND AIM: Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP); are two commonly requested laboratory tests that can help accurately diagnose and monitor inflammatory conditions such as infection, trauma, infarction, neoplasm, inflammatory arthritis, and systemic autoimmune disease. The aim of this study is to evaluate the correlation between normal ESR values and hematocrit-corrected ESR values at different ESR ranges with CRP. METHODS: A total of 100 patients with 20 patients in each group, whose ESR values were 0-20mm/h, 20-40mm/h, 40-60mm/h, 60-80mm/h, and over 80mm/h, measured with the Vision c automatic ESR system, were determined. The hematocrit of these patient groups was analyzed Sysmex XN-1000 and the CRP value was analyzed on Roche Cobas® 8000. ESR values corrected for hematocrit were calculated according to the formula [(hematocrit/45)Xsedimentation]. The correlation of these values with CRP and their clinical significance were examined. RESULTS: Measured ESR values and hematocrit corrected ESR values made a statistically significant difference ($p<0.001$), but the clinical significance calculated according to Cohen's d coefficient did not costitute a difference in the range of 0-20mm/h. These two compared ESR values were not correlated with CRP in all ESR intervals ($p>0.05$).There was correlation between corrected ESR and hematocrit except the 0-20mm/hr ESR range($p<0.05$). CONCLUSIONS: Since ESR is a test performed on whole blood, it is anticipated that it may be affected by blood compositions. It is known that it can be affected especially by hematocrit values. In this study, it was observed that the hematocrit values was significantly low in sedimentation values measured at 80 mm/h and above. Therefore, it was understood that a correction should be made in this range. In addition, the lack of correlation with CRP in different sediment ranges in this study, but the fact that there was a numerical correlation was attributed to the insufficient number of samples.
**Keywords:** Erythrocyte sedimentation rate, hematocrit, C-reactive protein

**P-006**
**CALCULATION OF MEASUREMENT UNCERTAINTY OF VITAMIN B12**

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BACKGROUND AND AIM: Measurement uncertainty is an important parameter in clinical biochemistry. Calculation of measurement uncertainty helps clinicians, especially when the smallest change in parameter level affects the outcome. The aim of this study was to calculate the measurement uncertainty of vitamin B12 results measured in Bezmialem Foundation University biochemistry laboratory and to compare the result with total allowable error % (TEa%). METHODS: Vitamin B12 was analyzed by Abbott Architect i2000SR using Abbott Architect B12 kit, which is a chemiluminescent microparticle intrinsic factor assay kit. The measurement uncertainty calculation model explained in Nordtest guide was used. Internal quality control data was taken from Abbott Architect i2000SR. RIQAS external quality reports were used to calculate u(bias) value. RESULTS: The %CVs of vitamin B12 internal quality controls (level 1-2-3) were found to be 8.84, 5.59, and 6.59, respectively. uRw value was calculated as 3.57%, and u(bias) was 7.3%. Uc result was 8.11%, and the measurement uncertainty value for vitamin B12 was calculated as 16.23%. This value was under the target value set by CLIA, which is 25% for vitamin B12. CONCLUSIONS: It is impossible to analyze any sample and find the exact amount of the desired analyte with our current equipment. Every calculation in clinical laboratories has some amount of uncertainty, i.e. measurement uncertainty. It is important to calculate the measurement uncertainty of the desired parameter to see if the result is above TEa%. In conclusion, we showed in our study that vitamin B12 results measured in Bezmialem Foundation University biochemistry laboratory had a measurement uncertainty of 16.23%, which was below the TEa set by CLIA.
**Keywords:** Measurement Uncertainty, Vitamin B12, CLIA

**P-007**
**CALCULATION OF REFERENCE CHANGE VALUES OF THE D-DIMER TEST**

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BACKGROUND AND AIM: D-dimer is considered a reliable marker of both coagulation activation and fibrinolysis. However, data on the biological variation of D-dimer are still limited. The numerical value that indicates the clinical significance of the change between two consecutive results is known as the critical difference or reference change value (RCV). Biological variation data has many important applications in laboratory medicine. In this study, we aimed to calculate our RCV in order to improve the clinical use of D-dimer in our hospital. METHODS: The analytical coefficient of variation (CVA) was calculated from the 2 month two-level results of the internal quality controls that we ran twice a day for D-dimer on a Roche Cobas 6000 analyzer in our laboratory. Intra-individual coefficients of variation (CVw) were obtained from the WESTGARD database of biological variation. RCV was calculated with the formula $Z \times 21/2 \times (CVA2 \times CVW2)1/2$ (95% CI, $Z=1.96$). RESULTS: Individuality index and reference change value for D-dimer ($Z=1.96$, 95% probability, bidirectional) were calculated as 0.87% and 65%, respectively. CONCLUSIONS: Analytical and biological variation calculations are taken into account when assessing the clinical significance of the variation between two consecutive outcomes of an individual. In tests with an individuality index <1, it is considered significant to exceed the RCV even if the results are within the reference range. The use of RCV in addition to the reference range for many analytes in the laboratory both improves decision making in a clinical setting and provides more reliable results from laboratories.
**Keywords:** D-dimer, Internal Quality Control, Reference Change Value

**P-008**
**EVALUATION OF AUTOVERIFICATION SYSTEM PERFORMANCE USED FOR COMPLETE BLOOD COUNT IN OUR LABORATORY**

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BACKGROUND AND AIM: Aim of this study is to evaluate performance of autoverification procedure carried out with the Sysmex Extended IPU program for routine complete blood count (CBC) results. METHODS: The study was carried out with the routine CBC results of the patients who applied to the outpatient clinics of our hospital. Routine CBC results analyzed between 01.06.2021-31.08.2021 were evaluated. Analyzes were performed on Sysmex XN-2000 and XN-3000 analyzers. Autoverification rules were defined to Extended IPU program. Critical value and Delta check rules were defined for hemoglobin, platelet and leukocyte results. Critical values <6 and> 20 g/dL for hemoglobin, <150 and> 1000 103/UL for platelet, <2 and> 30 103/UL for leukocyte. Delta check rules %25/90 days for hemoglobin, %50/90 days for platelet and %50/90 days for leukocyte were defined. In addition, in the presence of the abnormal WBC scattergram warning and lipemia/hemolysis/agglutinine suspect, the autoverification was blocked. RESULTS: The number of routine complete blood count results studied in the 3-month period is 41,973. 40,792 test results (97.18%) were autoverified. On the other hand, 1181 samples (2.82%) were manually verified. The most common reason for manual verification was the platelet critical value (684 samples-%1.63). This number was 259 (0.62%) for abnormal WBC Scattergram alarm, 59 (0.14%) for Platelet Delta Check, 50 (0.12%) for the suspicion of lipemia/hemolysis/agglutinine, 47 (0.11%) for WBC Delta check, 47 (0.11%) for hemoglobin critical value, 31 (0.08%) for WBC critical value, 4 (0.01%) for hemoglobin delta check. CONCLUSIONS: Autoverification ratio is well in terms of the reduction of laboratory workload and shortening of turnaround time. The most common cause of manual verification is platelet critical value. This situation is generally resulted from the clotted sample. The clotted sample, which is the most common source of preanalytical error in hematology laboratories, can be easily detected by autoverification system.
**Keywords:** Autoverification System, Complete Blood Count, Preanalitic Error

**P-009**
**IMPORTANCE OF CXADR GENE IN COVID-19**

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BACKGROUND AND AIM: The symptoms of coronavirus and myocarditis are similar to each other, such as chest pain. It is very important to distinguish between these two diseases to prevent or treat the disease. In this study, we aimed to describe connection of CXADR gene and ACE2 in COVID-19. METHODS: We were found similar genes with CXADR gene and ACE2 using STRING and GENEMANIA databases. Then, we attained pathway of viral myocarditis using KEGG Pathway Databases. After that, we got probably damaging SNPs on CXADR gene using Exome Variant Server and Polyphen2 databases. RESULTS: First of all, we showed the viral myocarditis pathway in our study. We found the expression level of the CXADR gene using bioinformatics methods and our results showed that the CXADR gene is overexpressed in skin, bladder, brain, stomach, prostate and testis. Then, we found 78 variations in the CDXADR gene in European American and African American populations, 11 of them were damaging polymorphisms in the CXADR gene. CONCLUSIONS: Our results may be support to explain the pathogenesis of high-risk group diseases in COVID-19. In the future, this study may contribution to solve physiopathology of COVID-19 linked with myocarditis.
**Keywords:** Cardiovascular diseases, infectious diseases, inflammatory diseases, viral infections

**P-010**
**INVESTIGATION OF GUT MICROBIOME IN HEALTHY INDIVIDUALS BY 16S METABARCODING METHOD**

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BACKGROUND AND AIM: Gut microbiota may have important effects on human health, such as nutrition, immunity, chronic diseases, and behavior; thus its disruption may result in developing many pathological conditions (e.g. Celiac disease, gastroenteritis, inflammatory bowel disease). For this reason, the reliable identification of members of the human healthy gut microbiota can be a guide to develop effective treatment regimes for microbiota-related diseases. This study aimed to determine the members of healthy gut microbiota. METHODS: Nine healthy gut tissues were collected from volunteers during a routine colonoscopy. DNA extractions were performed using TRIzol reagent and then, quantity and quality of the DNA samples were controlled. Bacterial 16s rRNA variable region (V3-V4) was sequenced by using Illumina Miseq platform. Bioinformatic analysis of the raw data was carried out using QIIME2 and taxonomic assignments were done by using SILVA database with a 70% confidence level cutoff for assignment. This work was supported by the grant from Inonu University Research Fund (FCD-2020-2065). RESULTS: A minimum of 40.000 high-quality paired-end reads per sample were provided by 16S rDNA targeted sequencing. Across all samples, the most abundant Bacterial phylum was Firmicutes. Although our analysis found that the most abundant bacterial genus was Bacteriodes, the most abundant species were Faecealibacterium prausnitzii, Prevotella copri and Bacterioides vulgatus. These species have previously reported as the members of healthy gut microbiota and may have potentially important roles in promoting gut health. CONCLUSIONS: This work will contribute to our understanding of the microbial community structure and composition of the healthy gut. However, further surveys will improve our knowledge of gut microbiota in health and disease.
**Keywords:** Microbiota, metagenomics, 16s rRNA

**P-011**
**THE ROLE OF MCV IN THE RATIONAL TEST REQUEST OF VITAMIN B12**

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BACKGROUND AND AIM: The aim of this study is ensure the correct use of laboratory resources by analyzing the relationship between Vitamin B12 and MCV(Mean Corpuscular Volume). METHODS: In this study, Vit B12 and MCV levels of patients who applied to Ankara Training and Research Hospital outpatient clinics between February 1 and August 1, 2021 were analyzed retrospectively. VitB12 and MCV results of a total of 49517 patients, 15222 males and 34295 females were evaluated. Patients with MCV results <80 fL were classified as microcytic, those with 80-100 fL as normocytic, and >100 fL as macrocytic. The cut-off value for vitamin B12 deficiency was <200ng/L. VitB12 was measured by the electrochemiluminescent method in Roche Cobas8000 and MCV was measured in Sysmex XN3000 complete blood count analyzer. Statistical analyzes were performed with the SPSS Ver 24 package program. RESULTS: MCV was normocytic and microcytic in 49224 patients (99.4%), and MCV was macrocytic in 293 patients (0.59%). MCV was macrocytic in only 4 (2%) of 202 patients (0.41%) with vitB12 <200ng/L. The number of patients with normal and low MCV levels and with VitB12 deficiency were 188 (0.4%). No significant correlation was found between Vit B12 and MCV levels in patients with vitamin B12 deficiency ($r= 0.006$, $p>0.05$). There was no significant difference in VitB12 levels in grouping as microcytic, normocytic and macrocytic ($p>0.05$). CONCLUSIONS: Although a protocol is required to avoid unnecessary use of laboratory resources; the uncertainty of compatibility between VitB12 and MCV makes it difficult to establish a protocol. However, it is appropriate to consider existing guidelines to avoid unnecessary testing, especially for Vitamin B12.
**Keywords:** MCV, Rational Test Request, Vitamin B12

**P-012**
**SERUM ANTIMULLERIAN HORMONE LEVELS AND COMPATIBILITY WITH TESTOSTERONE IN CHILDHOOD PERIOD**

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BACKGROUND AND AIM: Antimullerian Hormone (AMH) measurement is important in the diagnosis and follow-up of childhood reproductive-disorders. The aim was to determine the reference-ranges of AMH for the Beckman-Coulter-DXI800 measurement based on age for boys and girls by indirect method, and also its compatibility with serum-testosterone. METHODS: Study population consisted of children aged 0-18 years, who applied to Children's Hospital between 2015-2021, and whose AMH and sex-steroids were measured. Children with reproductive/endocrine disorders were excluded. Serum AMH was measured by the two-step sandwich method using Beckman-Coulter DXI800. A 2.5 percent and 97.5 percent were detected with 95% CI. Serum testosterone was determined by the CMIA method (Abbott Diagnostics, IL,USA). RESULTS: A classification was made based on age for boys and girls: Of 1111 patients 758 were girls/ 353 were boys. Groups of 0-1 mo, 1mo-1y, 1-3y, 3-6y, 6-12y,12-18y were formed. A reference range was determined for the AMH of this papulation. AMH peaked between 1 mo-3 y of age in boys (<224 ng/mL); it started to decrease in prepubertal-period (<88 ng/mL); remained at a low level (<25 ng/mL) in pubertal-period. AMH levels in girls were lowest in neonatal-period (<0.7 ng/mL); it started to rise in prepubertal-period (<6.8 ng/mL); did not change in pubertal-period (<9.4 ng/mL). Serum testosterone increased in the prepubertal and pubertal periods in boys and girls. CONCLUSIONS: In this study, AMH reference ranges were determined for Beckman Coulter DXI800 for girls and boys in the childhood. In boys, AMH was more compatible with testosterone in the first month.
**Keywords:** Anti mullerian hormone, reference range, Beckman DXI800, testosterone

**P-013**
**DEVELOPMENT AND COMPARISON OF DERIVATIZED AND DIRECT LC-MS/MS METHODS FOR MEASUREMENT OF ARGININE, HOMOARGININE, ORNITHINE, CITRULLINE, ARGININOSUCCINATE, ADMA AND SDMA IN DIALYSIS PATIENTS**

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BACKGROUND AND AIM: A non-derivative, easy, simple and economical LC-MS/MS method was developed for simultaneous measurement of Arginine (Arg), N-methylarginine (L-NMA), Asymmetric Dimethylarginine (ADMA) and Symmetrical Dimethylarginine (SDMA) which are molecules involved in Arginine and Nitric oxide metabolism as well as their precursor molecules including Homoarginine (HArg), Ornithine (Orn), Citrulline (Cit), Homocitrulline (HCit), Argininosuccinate (ArgSuc). A pre-dialysis and post-dialysis evaluation was performed in patients with chronic kidney disease by using the LC-MS/MS method. METHODS: Mobile phase composition and column type combinations were determined in order to obtain the most ideal chromatographic separation in the shortest time for the mentioned analytes. After the chromatographic conditions were determined, the specificity, linearity, reproducibility and detection and quantification limits of the method were determined. After validation of the developed method according to CLSI documents, pre- and post-dialysis samples were collected from 38 chronic kidney failure (CKF) patients. In addition, measurements and evaluations were made in the samples taken from 34 healthy individuals. RESULTS: When the analysis results of samples taken from patients with CKF before and after dialysis and healthy control group patients are compared, SDMA, ArgSuc, Cit, HCit values are significantly higher, while HArg values are significantly lower. ($p<0.05$ for all). All metabolites except Arg were significantly decreased in the pre- and post-dialysis comparisons in CRF patients ($p<0.05$ for all). CONCLUSIONS: Although ADMA, SDMA, ArgSuc, Cit, HCit, HArg, ArgSuc decreased with dialysis in CKF patients, all analytes except HArg were above the levels of the healthy control group. High levels of ADMA metabolites in patients with CRF will contribute to the chronic inflammation process.
**Keywords:** ADMA, SDMA, Arginine, Dialysis, LC-MS/MS

**P-014**
**SERUM NEUDESIN LEVELS IN PATIENTS WITH DIABETIC NEUROPATHY**

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OBJECTIVE: Neudesin, one of the membrane-associated progesterone receptors, is a protein with neural functions that participates in energy metabolism, has a cytochrome 5-like heme/steroid-binding domain. Although the effect of this protein has been demonstrated in an experimental model of type-2 diabetes mellitus (Type-2DM), its effect in humans is unknown. Diabetic neuropathy is the most common complication of diabetes mellitus. In our study, it was aimed to evaluate the relationship of neudesin, which has been suggested to play a role in the development of metabolic and neurological disorders, and the presence of neuropathy in patients with Type-2DM. MATERIALS-METHODS: 46 patients with diabetic neuropathy who applied to the neurology outpatient clinic and 37 control groups were included in the study. Circulating neudesin levels were measured by ELISA. RESULTS: The mean age of the patient group was 54±7.5 and the mean age of the control group was 35±13. The patient group consisted of more obese people than the control group. The serum neudesin level of the patient group was 254±155 ng/mL and the serum neudesin level of the control group was 414±188 ng/mL. Between the control group (n=37) and the patient group (n=46) there were significant differences in age ($p<0.001$), body mass index (BMI) ($p<0.001$), fasting plasma glucose (FPG) ($p<0.001$), HbA1c ($p<0.001$), neudesin ($p<0.001$) and urea ($p=0.005$). With serum neudesin level in the whole study group; age($p=0.025$, $r=-0.244$), BMI ($p=0.009$, $r=-0.297$), FPG ($p<0.001$, $r=-415$), HbA1c ($p=0.003$, $r=-0.351$), and urea ($p=0.049$, $r=-0.221$) was found to be negatively correlated. In the regression analysis, serum neudesin level (OR=0.997, 95% CI: 0.995-1.000, $p=0.033$) was found to be an independent risk factor in diabetic neuropathy patients. CONCLUSION: Considering the low serum neudesin level in the patient group and the negative correlation between serum neudesin level and FPG, BMI, serum neudesin level may be important in patients with diabetic neuropathy.
**Keywords:** Neudesin, Diabetes Mellitus, Neuropathy

**P-015**
**EVALUATION OF THE TRIGLYCERIDE-GLUCOSE INDEX AS AN INSULIN RESISTANCE MARKER IN ADULTS WITH IMPAIRED FASTING GLUCOSE METABOLISM**

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BACKGROUND AND AIM: The triglyceride to glucose index (TyG) have been proposed as reliable and simple alternatives for the evaluation of insulin resistance (IR). The aim of this study wav to evaluated the association between TyG and IR, with impaired fasting glucose (IFG). METHODS: In the this study, a total of 108 adults with IFG were evaluated retrospectively, who attended the outpatient service in 2021. Clinical data were collected from medical records. Fasting glucose(FG), TG, HDL-C, and insulin concentrations was measured using Roche commercial reactive. TyG indices were calculated according to the Ln(glu*TG)/2 equation.IR was defined as a HOMA-IR. RESULTS: In the present study, the average age was 44 ± 12.6 years (71% for female, 29% for males ). The mean FG and HgA1C were 104 ±12, 5.9± 0.45. The TyG index was 8..99 ± 0.52 and the mean HOMA-IR was 3.52 ± 1.34 in patients. HOMA-IR had a significant positive correlation with the TyG index ($r=0.292$, $p=0.002$). TyG index showed a lower ROC Area under Curve (AUC=0.698) than HOMA-IR index (AUC=0.788). CONCLUSIONS: This study have shown that the TyG index may be used as a marker associated with IR in the period of IFG. However, the validity of these results should be explore with a larger population.
**Keywords:** HOMA-IR, Insulin resistance, TyG index, Impaired fasting glucose

**P-016**
**NEUTROPHIL LYMPHOCYTE RATIO, PLATELET LYMPHOCYTE RATIO AND IMMATURE GRANULOCYTE PERCENTAGE IN PATIENTS WITH SEPSIS AND SEPTIC SHOCK**

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BACKGROUND AND AIM: Sepsis is a life-threatening condition that damages the body's own tissues and organs as a result of the dysregulated host response to infections. In this study, we aimed to investigate the diagnostic and prognostic values of neutrophil lymphocyte ratio (NLR), platelet lymphocyte ratio (PLR) and immature granulocyte percentage (IG%), which are among the parameters of complete blood count (CBC) in patients with sepsis and septic shock. METHODS: This retrospective study included 164 patients (81 sepsis, 83 septic shock) who were hospitalized in Ege University Hospital Internal Medicine intensive care unit between September 2013 and August 2021. The inclusion criteria of the patients were hospitalization in the intensive care unit for at least three days and being older than 18 years of age. Sepsis and septic shock were classified according to sepsis-3 criteria. Demographic, clinical and laboratory data of these patients were analyzed. $p < 0.05$ was considered significant. RESULTS: 28 day mortality was 25.9% and 42.2% in patients with sepsis and septic shock respectively. While there was no statistically significant difference in NLR and PLR values between the sepsis and septic shock patient groups, there was a significant difference in the IG% and SOFA scores. (p values 0.511, 0.559, 0.004 and <0.001 respectively) ROC analysis shows that the area under curve (AUC) for IG% and SOFA score for 95% confidence interval was 0.630 (0.545-0.715, $p=0.004$) and 0.867 (0.809-0925, $p=0.000$) respectively. Logistic regression analyzes were performed to investigate their prognostic values. While NLR, PLR and IG% were not associated with mortality, SOFA score was associated with mortality. (p values 0.216, 0.901, 0.352 ve 0.002 respectively) CONCLUSIONS: Although CBC is a cheap and practical test, its diagnostic and prognostic value in sepsis and septic shock is limited. IG% can be a useful biomarker in the diagnosis of sepsis and septic shock.
**Keywords:** sepsis, septic shock, immature granulocyte, complete blood count

**P-017**
**EVALUATION OF SERUM ANGIOTENSIN CONVERTING ENZYME (ACE) ACTIVITY IN PEDIATRIC PNEUMONIA PATIENTS**

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BACKGROUND AND AIM: In this study, we aimed to evaluate whether serum ACE (angiotensin converting enzyme) activity can be used in the differential diagnosis of viral and bacterial pneumonia in pediatric patients diagnosed with pneumonia. METHODS: In the study, patient between 6 months and 13 years of age were included in the study. Pneumonia was defined according to new infiltrates seen on lung x-ray and cough, sputum, fever, pulmonary auscultation findings consistent with pneumonia, leukocytosis or leukopenia and CRP values. Patient was defined as bacterial pneumonia (n=21), viral pneumonia (n=19) and healthy controls (n=46). Serum ACE activity was quantified using BEN Biochemical Enterprise ACE kit on Roche Cobas 6000 analyzer, CRP was performed on Roche Cobas 8000 analyzer and complete blood counts were quantified on Sysmex XN 3000 analyzer. Statistical analyzes were performed with the SPSS Ver 24 package program. RESULTS: A significant difference was found between the patients diagnosed with pneumonia and the control group in terms of serum ACE activity (p=0.017), WBC count (p=0.000) and neutrophil count (p=0.003). While there was a significant difference in serum ACE activity between viral pneumonia and control group (p=0.016), no significant difference was found between bacterial pneumonia-viral pneumonia, bacterial pneumonia-control group (p>0.05). While leukocyte counts were significantly different between bacterial pneumonia and viral pneumonia and between bacterial pneumonia and control group (p=0.000), no significant difference was found between viral pneumonia and control group (p>0.05). The relationship between the neutrophil count and the groups was similar to the relationship between the leukocyte counts and the groups. No significant difference was found between groups and CRP. When the diagnostic value of serum ACE activity was analyzed by ROC analysis, the area under the curve was found to be 0.649. CONCLUSIONS: According to our findings, serum ACE activity is not an effective marker that can be used in the differential diagnosis of viral pneumonia and bacterial pneumonia. However, it can distinguish pneumonia patients from the healthy control group. We believe that the effectiveness of this marker can be better evaluated with studies to be conducted in larger patient groups.
**Keywords:** serum ACE activity, pneumonia, pediatrics

**P-018**
**INVESTIGATION OF HEMATOLOGICAL AND INFLAMMATORY PARAMETERS IN COVID-19 INFECTION**

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BACKGROUND AND AIM: In this study, we aimed to examine the changes in Neutrophil/Lymphocyte ratio (NLR), C-Reactive Protein (CRP), Ferritin, Lactate Dehydrogenase (LDH), D-Dimer and Systemic immune inflammation index (SII) parameters according to age and gender in patients with COVID-19 infection. METHODS: A total of 322 inpatients (Female: 180, Male: 142) who applied to Lokman Hekim University Ankara Hospital between March 2019 and August 2021 and had positive PCR tests were included in the study. The patients were divided into five age groups (1st group: 1-17 years; 2nd group: 18-30 years; 3rd group: 31-45 years; 4th group: 46-60 years; 5th group: 61-92 years). Laboratory results and demographic findings of PCR-positive patients were reviewed retrospectively. WBC, NLR, CRP, Ferritin, LDH, D-Dimer, SII values of the patients included in the study were examined in the study. RESULTS: When NLR, CRP, Ferritin, LDH, D-Dimer parameters were evaluated according to age groups, there was a significant difference (p<0.05). When the first and 2nd groups were compared, there was a significant difference in the D-dimer level. When the first and 3rd groups were compared, there was a significant difference in LDH, WBC, CRP levels. When the first and 4th groups were compared, there was a significant difference in the CRP levels. When the first and 5th groups were evaluated, a significant difference was observed in the levels of Ferritin, NLR, and CRP (p<0.05). When the correlations of NLR, CRP, Ferritin, LDH, D-Dimer values with respect to age were examined, CRP, LDH and Ferritin levels showed a moderate correlation (r=0.557, r=0.408, r=0.400, respectively); No correlation was observed in NLR, D-Dimer and WBC values. When evaluated according to gender, infection-related parameters (CRP, NLR, WBC and Ferritin) were found to be higher in males (p<0.05). When SII values were evaluated according to age and gender, no significant difference was observed (p>0.05). CONCLUSIONS: Since inflammatory and prognostic markers vary in patients with COVID-19 infection, we think that it would be useful to evaluate WBC, NLR, CRP, Ferritin, LDH, D-Dimer parameters and demographic data together for the follow-up of infection.
**Keywords:** COVID-19, Sars-CoV-2, Ferritin, D-dimer, C-reactive protein

**P-019**
**PLASMA SOLUBLE UROKINASE PLASMINOGEN ACTIVATOR RECEPTOR (SUPAR) LEVELS IN ULCERATIVE COLITIS**

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BACKGROUND AND AIM: Soluble urokinase plasminogen activator receptor (SuPAR), a soluble form of the urokinase-type plasminogen activator receptor, is a biomarker produced by macrophages, monocytes, neutrophils, active T cells, endothelial cells and circulating tumor cells. SuPAR is a novel biomarker showing altered inflammation in many inflammatory diseases. This study aims to investigate the SuPAR level in ulcerative colitis (UC) patients and to evaluate the SuPAR level in active and remission patients. METHODS: Patient and healthy control SuPAR levels were analyzed by immunoassay method and SuPAR levels between UC patients and control group were compared. The difference between SuPAR levels in patients with active UC and UC in remission was analyzed. The relationship between C-reactive protein level, Total Mayo score, Mayo Endoscopic score used to predict disease activity, and amount of SuPAR were evaluated. RESULTS: SuPAR levels were determined in the UC patient group (2170,3±121,0 pg/ml) and healthy controls (2130,7±164,8 pg/ml) (p = 0. 805). Median SuPAR levels were determined in moderate UC (2479 pg/ml), mild UC (1944 pg/ml) and patients in remission (1774 pg/ml) (p = 0,207). There were no significant relationships between SuPAR levels and CRP levels, Total Mayo score, and disease duration in the UC group (r=0.177, r=0.267 and r=0,007; respectively p >0.05). A slightly positive correlation was found between Mayo Endoscopic Score and SuPAR level (r=0.303; p=0.031). CONCLUSIONS: SuPAR is of limited value in the diagnosis of ulcerative colitis and in the assessment of disease activation.
**Keywords:** Biomarker, inflammatory bowel disease, mucosal inflammation, SuPAR, ulcerative colitis

**P-020**
**OPTIMIZATION OF BIOACTIVE LAYER IN IMMOBILIZATION OF GLUTATHIONE REDUCTASE ENZYME**

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BACKGROUND AND AIM: Glutathione Reductase (NADPH; GSSG oxidoreductase, E.C. 1.6.4.2) is a member of the oxidoreductase enzyme family, which converts oxidized glutathione to reduced glutathione. The Glutathione Reductase enzyme maintains the intracellular -SH/-SS- ratio by increasing the Glutathione (GSH)/Oxidized Glutathione (GSSG) ratio. In this study, Glutathione Reductase was immobilized to the bioactive layer created to design an enzyme-based biosensor. It was aimed to optimize the bioactive layer, which was the basic stage in immobilization. METHODS: BSA/Gelatin was used as the nanopolymer in the bioactive layer of the biosensor. Glutaraldehyde was used as the crosslinking agent. Triple electrode system was used in potentiometric measurements. Biosensor responses were evaluated at pH 7.8, a concentration of 100 mM phosphate buffer, and a temperature of 35°C. Increasing volume (5, 6, 7, 8, 9, 10 microliters) of BSA/Gelatin polymer was prepared. In this study, the effects of different percentages of glutaraldehyde, which was used as a cross-linking agent, on the biosensor response were investigated. RESULTS: It was determined that the optimum sensor response of the Glutathione Reductase enzyme was obtained in 5 µL BSA/Gelatin. The highest sensor response of the Glutathione Reductase enzyme was observed at 2% glutaraldehyde concentration. The amount of Glutathione Reductase enzyme was constant at 5 µL. CONCLUSIONS: In enzyme-based biosensor studies, immobilization parameters are the basis of the sensor system. It was concluded that determining the optimum amount of each immobilization measurement conditions gave the most accurate and fast response in the biosensor. In the next step, interference studies will be carried out.
**Keywords:** Biosensor, Glutathione Reductase, Optimization

**P-021**
**IN VITRO AND IN SILICO EVALUATION OF THE INHIBITORY EFFECTS OF AUXINS ON HUMAN PLACENTAL GLUTATHIONE S-TRANSFERASE P1-1**

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BACKGROUND AND AIM: Glutathione S-transferases (GSTs) is a family of phase II enzymes which detoxify xenobiotics in the body through catalyzing their conjugation to glutathione. Implication of GSTs in detoxification process can result in a multifactorial phenomenon termed as multidrug resistance (MDR) in cancer patients. Therefore, GST superfamily is now extensively targeted in the attempt to develop more competent chemotherapeutic agents for treating cancer. Auxins which are a class of plant hormones that play crucial role in plant growth and development. Particularly, indoleacetic acid is known to bind GST and regulate its function in plants. In this study three classes of auxins, indoleacetic acid (IAA), indolepropionic acid (IPA) and indolebutyric acid (IBA) were examined for their inhibitory effect on hpGSTP1-1 as a mean to reduce its activity and combat MDR in patients undergoing chemotherapy. METHODS: Different auxin concentrations (0.3125–10 mM) were tested for the estimation of *IC50* values. Then inhibitory kinetic experiments were carried out at four chosen inhibitor concentrations (0.25, 0.5, 1 and 2 mM). The inhibition types and kinetic parameters were determined from graphs and SPSS version 20. The structural basis for the interaction between hpGSTP1-1 and auxins were predicted using molecular docking. RESULTS: All three classes of auxins inhibit the activity of hpGSTP1-1 in a competitive manner in respect to both substrates. Their *IC50* values were calculated as 9.7, 7.2 and 7.0 mM for IAA, IPA and IBA, respectively. These inhibitory auxins were predicted to be stabilized mainly by the hydrophilic amino acid residues that are located at the glutathione-binding site (G-site) of the enzyme. CONCLUSIONS: Our integrated *in vitro* and *in silico* study reveals the ability of auxins to inhibit hpGSTP1-1, so that they could be considered in the development of novel drugs which are less cytotoxic and effective at very low concentrations.
**Keywords:** Human placental glutathione S-transferases, indoleacetic acid, indolepropionic acid, indolebutyric acid, inhibition kinetics, molecular docking

**P-022**
**COMPARISON OF THE EFFECTS OF MISTLETOE EXTRACT AND N-ACETYL CYSTEINE ON VITAMIN D LEVELS IN IONIZED RADIATION EXPOSURE**

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BACKGROUND AND AIM: It is observed that vitamin D levels and many related biological functions are negatively affected in patients after chemotherapy and radiotherapy. Many studies have shown that different mistletoe extracts have a strong cytotoxic effect on cancer cells, contribute to reducing the side effects of chemotherapy and radiotherapy, and have a regulatory role on the immune system. In our study, we aimed to compare serum vitamin D levels in irradiated experimental animals by combining ethanol extract obtained from mistletoe collected from almond trees, whose radioprotective effects we investigated, alone or in combination with n-acetyl cysteine (NAC).. METHODS: Mistletoe extract was obtained by the soxhlet extraction method. In the 14-day experimental study, 38 Wistar albino male rats, 6-10 weeks old, were used. Working groups; control(n=6),radiotherapy(RT)(n=8),RT+Mistletoe(VA)(n=8),RT+NAC(n=8),RT+VA+NAC(n=8) Edited. On the first day of the study, a single dose of 12 GyRT was applied to the groups to be treated with RT. During the experiment, 500 mg/kg of mistletoe extract was administered by gavage and 275 mg/kg/48 hours of NAC was administered intraperitoneally to the relevant groups every day. At the end of the 14th day, samples were collected by blood collection from the heart under anesthesia. At the end of the study, 2 animals from each group died. The blood samples were centrifuged at 3500 rpm for 10 minutes and the serum part was separated. Vitamin D levels in serum samples were analyzed by LC-MS/MS device. Statistical analysis IBM SPSS 20.0. non-parametric tests with the program; It was performed using Kruskal-Wallis rank one-way analysis of variance and Mann-Whitney-U tests.. RESULTS: Compared to the control group; Vitamin D levels decreased in the RT andRT+VA groups, respectively(p=0.016,p=0.010),while there was no significant difference in theRT+NAC, RT+VA+NAC groups(p=0.273,p=0.144). compared to the RT group; There was no significant difference in the RT+VA,RT+NAC, RT+VA+NAC groups(p=0.749,p=0.068,p=0.584).. CONCLUSIONS: When our results are examined,it is seen that ethanolic almond mistletoe extract cannot prevent the regression of vitamin D levels when used alone. Although there is no significant difference, studies with longer experimental times will reveal the effect of almond mistletoe extract and NAC combination more clearly that the combination of almond mistletoe extract may be more effective
**Keywords:** Radiation, mistletoe extract, N-Acetyl Cysteine, vitamin D.

**P-023**
**THE RELATIONSHIP OF NEUTROPHIL AND LYMPHOCYTE VOLUME PARAMETERS WITH GESTATIONAL DIABETES**

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BACKGROUND AND AIM: Pregnancy is a condition characterized by many physiological hematological changes which could be considered pathological in the usual condition. When leukocytosis caused by the physiological stress caused by pregnancy is examined, it is seen that the most increased type of leukocyte is neutrophils. Mean Neutrophil Volume (MNV) and Mean Lymphocyte Volume; (MLV) come out as new markers of activated neutrophils and lymphocytes. Gestational Diabetes Mellitus (GDM) also goes with an inflammatory response that creates insulin resistance. In this study, we investigated the Mean Neutrophil and Mean Lymphocyte Volumes; comparing with Gestational Diabetes Mellitus patients and control group and; analyzed the change of Neutrophil and Lymphocyte Volumes in GDM. METHODS: 50 pregnant woman who has gestationel diabetes mellitus and applied to the Medical Biochemistry Laboratory of Selcuk University Medical Faculty Hospital in the last year and complete blood count was studied were included in the study. As the control group, 50 pregnant women without any chronic disease were selected. Neutrophil and lymphocyte volumes were studied retrospectively. RESULTS: All of the patients were pregnant, mean age was 31.6 for the patient group and 31.3 for the control group. There was no statistically significant difference between the patient and control groups in terms of mean age. Neutrophil volume was found to be 146 fL (133-1519) and 144 fL (132-1475) in the patient and control groups, respectively, p=0.137, and there was no significant relationship between them. Lymphocyte volume was found to be 87 fL (81-854) in the patient group and 84 fL (78-882) in the control group and the p= 0.005, and there is a significant relationship between them. CONCLUSIONS: With further studies in this field, Neutrophil and Lymphocyte Volume parameters can be used as a risk marker for GDM by using it with some other risk factors.
**Keywords:** Pregnancy, Gestational Diabetes, Complete blood count, Neutrophil, Lymphocyte

**P-024**
**EVALUATION OF METABOLITE PROFILES OF FORMALIN-FIXED AND PARAFFIN-EMBEDDED TISSUES BY MALDI-IMAGING MASS SPECTROMETRY**

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BACKGROUND AND AIM: Metabolites are compounds less than approximately 1,500 Da that reflect the starting molecules, products, and intermediates of metabolic pathways. The number of studies on the metabolite profiles of formalin-fixed and paraffin-embedded (FFPE) tissues is limited, since fixation with formalin may alter the metabolite content of the tissue and potentially cause metabolite loss due to potential changes. However, chemical and spatial preservation of metabolites has been demonstrated by histology-based matrix-assisted laser desorption/ionization (MALDI) imaging mass spectrometry studies. This study aimed to evaluate the effect of different MALDI matrix application parameters of metabolite profiles in FFPE thyroid tissue. METHODS: The thyroid tissue sample were sectioned with a microtome at 3 µm onto conductive indium tin oxide (ITO) coated slide. After the tissue was heat treated, it was washed with xylene. Two different 9-Aminoacridine (9-AA) matrix concentrations (10 mg/ml and 2 mg/ml) prepared in 70% (v/v) methanol were used to coat the tissues with matrix. The slides were coated with 9-AA matrix by adjusting different nozzle positions (Z=25 mm, Z=15 mm) using the Sun Collect (Sun Chrome GmbH) device. Analyzes on RapifleX MALDI Tissue Typer (Bruker Daltonics) mass spectrometer in negative-ion reflectron mode over the m/z range of 50 to 1000. RESULTS: When the matrix density was increased in FFPE thyroid tissue, more metabolite peaks were detected. While the tissues were coated with 10 mg/ml 9-AA matrix, the metabolite peak number was higher at Z=25 mm nozzle position, but the

metabolite peak with the highest signal intensity (m/z 193.3) was selected for both nozzle positions and as a result of 3 replications analysis. There was no significant difference in the signal intensities at two different nozzle positions ($p>0.05$). CONCLUSIONS: In the investigation of metabolites by MALDI-Imaging mass spectrometry, it is important to analyze the matrix application parameters along with the comparison of different matrix concentrations. Of the different parameters applied in this study, the application of 10 mg/ml 9-AA matrix concentration with a 25 mm nozzle position resulted in more metabolite peaks. Acknowledgments: This work was supported by TUBITAK 1002 grant (219S169).
**Keywords:** MALDI-Imaging Mass Spectrometry, Metabolite Profiling, Matrix Optimization, FFPE

**P-025**
**DEVELOPING ALGORITHMS TO PREVENT FALSE HBA1C RESULTS IN INDIVIDUALS WITH HEMOGLOBIN VARIANT AND HIGH HEMOGLOBIN F LEVELS**

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BACKGROUND AND AIM: HbA1c measurements which is commonly used in diabetes patients' most common interferences are due to Hb variants and high HbF levels. Our aim in this study is to develop an in-laboratory algorithm that prevents erroneous HbA1c results by evaluating HbA1c results retrospectively. METHODS:Theresultsofindividualswhosimultaneouslyhad HbA1cmeasurement and Hemoglobin Variant analysis by capillary electrophoresis method between February and August 2021 were obtained from the Laboratory Information System (LIS). HbF levels and presence of Hb variant, which are the sources of interference that may affect HbA1c test results, were evaluated. RESULTS: In our study, 59,624 HbA1c results and 1026 simultaneous Hb electrophoresis analyzes were evaluated. In patients with Hb variant, HbAD 35.9% (n=14), HbSS 28.20% (n=11); HbAS 28.20% (n=11); HbAC 2.56% (n=1), HbDD 2.56% (n=1) and HbXX 2.56% (n=1) was determined respectively.Hb F values of 24 patients (2.3%) were higher than 23%. HbSS was present in 20.8% (n=5) of the patients with this Hb F elevation. In total, 24 patients with elevated HbF, and additionally 13 patients with Homozygous Hb variants, were likely to have a false HbA1c result.
CONCLUSIONS: An in-laboratory algorithm was developed to prevent misleading HbA1c measurement in individuals with a hemoglobin variant and high hemoglobin F levels. According to this algorithm, the results of individuals with Homozygous and Compound Heterozygous Hb variants were considered as invalid and individulas are recommended to use fructosamine and glycealbumin measurements as the alternative tests for glycemic control.In the presence of heterozygous Hb variant, adding the detected variant to the LIS and validating the results was included in the algorithm. Thus, an in-laboratory algorithm was developed to prevent misleading HbA1c results in individuals with a hemoglobin variant and high hemoglobin F levels.
**Keywords:** HbA1c, Rational laboratory use, capillary electrophoresis, sources of interference, Hb variant analysis

**P-026**
**DIFFERENTIAL DIAGNOSIS OF PSEUDOHYPERPHOSPHATEMIA IN A CASE WITH PARAPROTEINEMIA**

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BACKGROUND AND AIM: In Multiple Myeloma (MM), cancer of plasma cells, test interferences due to increased paraprotein can be seen. In this case report, preanalytical preparation to determine whether the cause of hyperphosphatemia in a patient with MM with clinically inconsistent hyperphosphatemia is paraprotein-related interference is discussed. METHODS: The serum phosphate level of a 66-year-old female patient diagnosed with MM 5 years ago was measured high (17 mg/dL) inconsistently with the clinic. The patient's total protein level is 112.3 g/L, albumin is 32.8 g/L and globulin is 79.5 g/L. Phosphate levels were measured with the photometric ammonium molybdate method in the Roche Cobas 702 device by applying 4 different preanalytical procedures for the differential diagnosis of the case, which was thought to be a spurious hyperphosphatemia as a result of paraprotein interference. In the 1st procedure, the serum was diluted only 1:1. In the 2nd procedure, 500 µL of the sample was diluted 1:1, then 100 µL of 20% trichloroacetic acid (TCA) to precipitate paraproteins and 60 µL of 1.5 N sodium hydroxide (NaOH) as a buffer were added. In the 3rd procedure, the same amount of TCA and NaOH was added to 500 µL of serum. In the 4th procedure, after 1:1 dilution, 100 µL of 20% TCA was added to 500 µL of the sample. RESULTS: The total protein (g/L) and phosphate (mg/L) levels obtained after the procedures are as follows: 1st procedure 109/16.2; 2nd procedure 18/2.02; 3rd procedure 1/0.43; 4th procedure 19/4.62. Although no significant change was observed with only dilution, phosphate levels were found too low to be clinically compatible in diluted and undiluted samples with precipitation and buffering. It was thought that the high pH created by NaOH caused the spontaneous reduction of molybdate. Phosphate value obtained in the 4th process with dilution and TCA precipitation was measured at the most compatible level with clinic. CONCLUSIONS: Since hyperphosphatemia is a serious electrolyte problem that usually progresses asymptomatically, clinical and laboratory cooperation and exclusion of paraprotein interference in phosphate measurements are important for patient health. In this case, with predicted pseudo-hyperphosphatemia, the differential diagnosis was confirmed by preanalytical procedures, and unnecessary/incorrect treatment was prevented.
**Keywords:** pseudohyperphosphatemia, paraproteinemia, Multiple myeloma

**P-027**
**AN ANALYTICAL INTERFERENCE FACED DURING A STUDY ON A COMMERCIAL SPECIES-SPECIFIC ELISA KIT**

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BACKGROUND AND AIM: The phenomenon that occurs when an antibody specifically targeted to one antigen is successful in binding to another antigen is called cross-reactivity. In this study, it is aimed to indirectly show that cross-reactivity occurs in the analysis made in a commercial ELISA kit and to report the experience gained. METHODS: In our study, two groups were formed using athymic CD1 nude mice to create a heterotopic tumor model with the PANC1 cell line. Natural killer cells (NKcs) derived from human umbilical cord mesenchymal stem cells (h-UKMSCs) administered intravenously, ELISA kits measuring human plasma granzyme B, perforin and interferon-γ (INF-γ) levels to determine the cytotoxic activity of NKc (Sunred Biological Technology Ltd, Shanghai, China). Since the NKc of the mouse will be stimulated with the interleukins (IL-2, IL-15) applied to the mouse in the NKc treatment, the human kit was preferred to avoid cross-reactivity. RESULTS: In the cytokine-treated untreated tumor group (control), granzyme B: 163.1-207.7 ng/L, (179.5±15.5 ng/L); perforin: 90.1-198.7 ng/L, (133.2±40.1 ng/L); INF-γ: 8.8-23.4 ng/L, (17.2±5.4 ng/L) were found on the other hand In the group of tumors originating from h-UKMSC treated with NKc (treatment) granzim B: 162.2-201.3 ng/L, (178.4±12.4 ng/L); perforin: 138-156.6 ng/L, (147.1±7.7 ng/L); INF-γ: 12.2-25 ng/L, (18.6±4.2 ng/L) were measured. Groups were determined within the reference range provided by the kit. CONCLUSIONS: While the control group carried only mouse NKc; the treatment group also had human NKc. Our aim was to measure human NKc secretions. However, the human ELISA kits used in the study also measured in the reference range in the control group measurements where only mouse NKc was present. This suggested that the ELISA kit had low specificity or was susceptible to cross reactivity. Due to these results, which will cast doubt on the reliability of the data obtained from the use of commercial ELISA kits in experimental models, it is important to make more stringent controls in kit production and to share such problems with the scientific community.
**Keywords:** Natural Killer Cell, ELISA, Granzyme B, Perforin, Interference, Cross Reactivity

**P-028**
**COMPARISON OF NA, K AND CL VALUES MEASURED BY BLOOD GAS ANALYZER AND LABORATORY AUTOANALYZER**

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BACKGROUND AND AIM: Electrolytes are one of the most frequently measured analytes with physiological significance for many body functions. The concentration of plasma electrolytes is routinely assessed with a blood gas device (direct IFSE) or laboratory autoanalyzer (indirect IFSE). The results of electrolyte values in biochemistry laboratories take much longer than blood gas devices. In addition, factors such as serum protein and lipid disorders also affect the results. The ideal anticoagulant for blood gas measurement is lithium heparin. However, Na-heparin is routinely used as an anticoagulant due to its cost and easy availability. This application causes sodium contamination and causes a false high value. In our aim; to determine the difference in sodium level of Na-heparin use and to investigate the usability of Na, K and Cl values from blood gas electrolytes instead of autoanalyzer electrolyte values.

METHODS: Venous blood samples were collected from 10 healthy volunteers into gel biochemistry tube, tube with Li-heparin, insulin syringes washed with Li-heparin and Na-heparin. The Na, K and Cl levels of Li- and Na-heparinized whole blood samples were studied in the existing blood gas device (siemens RAPIDLAB 1200), and serum samples in the existing autoanalyzer (Cobas e801). RESULTS: When serum indirect ISE and direct ISE with Li-heparin and direct ISE with Li-heparin were compared with Na-heparin direct ISE, Na and K were both statistically and clinically significant (<0.001). When serum indirect ISE and Na-heparin direct ISE were compared, Na and K were found to be statistically significant (<0.05,<0.001). CONCLUSIONS: It is not appropriate to use K and Na measurement results with blood gas analysis instead of measurement results with autoanalyzer. Factors such as the different types of samples used during the two analyzes, sodium contamination, and holding the samples may play a role in the inconsistency between the autoanalyzer and blood gas results. **Keywords:** Blood gas, Electrolytes, Anticoagulant

**P-029**
**INVESTIGATION OF THE DNA POLYMERASE INHIBITOR PNR7-02 EFFECT ON CISPLATIN TREATED MCF-7 BREAST CANCER CELLS**

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BACKGROUND AND AIM: Breast cancer is the most common cancer type among women. The most important limiting factor in the cancer drug treatment is the drug resistance development. Cisplatin is a platinum group drug frequently used in many types of cancer including breast cancer. It achieves its effects by causing damage to DNA and killing cancer cells. DNA damage tolerance mechanisms may reduce these effects, and may lead to cisplatin resistance development. The most important enzyme in damage tolerance is DNA polymerase eta(Poleta), and its inhibition in HAP1 and over cancer cells could increase cisplatin efficacy. The aim of this study is to investigate how PNR-7-02, a Poleta inhibitor affects cell viability in cisplatin-treated/untreated MCF-7 breast cancer cells. METHODS: MCF-7 cell lines grown in DMEM containing 10%FBS, 100ug/ml penicillin- streptomycin in an incubator containing 5%CO2, seeded at 6000cells/well in a 96-well plate and kept for 24 hours. Cisplatin and/or PNR-7-02 administered for 24-48 hours at different doses, and cell viability measured by MTT method, Combination indexes(CI) calculated by CompuSyn_software. RESULTS: Cisplatin and PNR-7-02 decreased cell viability when administered alone. The IC50 values after 24 and 48 hours of drug administration were 21.46±1.10µM and 13.15±1.03µM for cisplatin, 18,17±1,09µM and 12,83±1,07µM for PNR-7-02, respectively. Our data shows that the administration of PNR-7-02 together with cisplatin increases the effectiveness of cisplatin at low concentrations. CONCLUSIONS: PNR-7-02/cisplatin administration alone has cytotoxic effects on MCF-7 cells. According to CI values, PNR7-02 and cisplatin were mostly synergistic at low concentrations. This study was supported by Hacettepe_University Scientific_Research_Projects_Coordination_Unit, project numbered TYL-2020-18767. **Keywords:** Breast cancer, Cisplatin, DNA polymerase eta, DNA damage tolerance, PNR-7-02

**P-030**
**GANODERMA APPLANATUM MODULATION OF NF-κB INHBITION VIA COLONY FORMATION**

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BACKGROUND AND AIM: Inflammatory bowel diseases are known to cause colon cancer. In cancers caused by inflammatory bowel diseases, suppression of the tumor occurs by NF-kB inhibition. NF-kB causes an increase in reactive oxygen species in the cell. *Ganoderma applanatum* is a fungus with important biological properties. It was aimed to investigate the effects of *Ganoderma applanatum* fungus on NF-κB gene and protein expression in colon cancer cells DLD-1 and HT-29 cells. METHODS: The cytotoxicity studies of *Ganoderma applanatum* extracts in colon cancer cells and colon healthy epithelial cells were determined fluorometrically using the Alamar blue method. Colon cancer cells were treated with the extracts at the IC50 value calculated with the aid of the sigmoidal graph. Molecular analyzes were performed by qRT-PCR methods. RESULTS: The IC50 value of *Ganoderma applanatum* methanol extract in DLD-1 and HT-29 cells, which are colon cancer cells, was 20.79µg/mL and 140 µg/mL, respectively, while it was 189 µg/mL in healthy colon epithelial cells CCD-18Co found. It was determined that there was a 90% inhibition in DLD1 cells. It was determined that there was a 3-fold decrease in NF-kB gene expression in DLD-1 and 3.5-fold decrease in HT-29 cell. CONCLUSIONS: When the findings were evaluated, it was determined that there was a decrease in NF-kB gene and protein expression in cells treated with *Ganoderma applanatum*. In this context, it has been observed that there is a decrease in the colony formation potential with migration and invasion associated with the NF-kB signaling pathway **Keywords:** Colon Cancer, Colony Formation, {Ganoderma applanatum}, Inflamation, NF-κB

**P-031**
**KAEMPFEROL MODULATES PROSTATE CANCER ASSOCIATED PATHWAYS**

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BACKGROUND AND AIM: The high prevalence of prostate cancer and the lack of expected results in treatments provide opportunities for new searches. Herbal agents such as flavonoids, with their biosafety, make them a very interesting agent for the treatment of prostate cancer. One of the flavonoids frequently used in cancer treatment is kaempferol. Kaempferol has been found to inhibit the viability of cancer cells. However, it has not been clarified by which cellular pathways it leads to cell death. The study aims to explain the effect of kaempferol on WNT/β-catenin and MAPK pathways at the molecular level. METHODS: For this purpose, the cytotoxic effect of kaempferol on prostate cancer cell PC-3 and healthy prostate epithelial cell PNT1A was found using Alamar Blue reagent. In addition, the changes in the expression of Kras, APC, and MLH-1 genes in the pathways encountered in prostate cancer were found by the qRT-PCR method. RESULTS: The cytotoxic effect of kaempferol was found to be 16.9 µM in PC-3 cells and 206.4 µM in PNT1A cells. As a result of gene expression studies, it was determined that kaempferol decreased the expression of the Kras gene by 5.87-fold. It increased APC gene expression 3.15-fold and MLH-1 gene expression 4.36-fold. CONCLUSIONS: As a result, kaempferol was able to differentiate between cancer cells and healthy cells. It has led to the death of cells by modulating many pathways in cancer formation. All these results show that kaempferol may be an interesting treatment method in the treatment of prostate cancer. **Keywords:** Cytotoxicity, Kaempferol, Prostate Cancer, Signaling Pathways

**P-032**
**MOLECULAR MECHANISM OF CYTOTOXIC EFFECT OF VIBURNUM OPULUS FRUIT EXTRACT ON HUMAN COLORECTAL CARCINOMA**

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BACKGROUND AND AIM: Viburnum opulus L. is a traditional medicinal plant belonging to Adoxaceae family. The fruits have been used as folk medicine for kidney stones, duodenal ulcers, tension, cold, and cough in some countries. In this study, we aimed to determine the cytotoxic effect of methanol extract of V. opulus fruits (EVO) on human colorectal carcinoma (hCRC) cell lines including DLD-1, HT-29, SW-620, and Caco-2 and clarify the molecular mechanism of this cytotoxicity by investigating protein and mRNA expressions of colorectal cancer key genes; APC, MLH1, TP53, SMAD4, KRAS, and BRAF1 in these cell lines. METHODS: Fresh fruits of V. opulus were crushed and extracted with methanol. The filtered extract concentrated to dryness and lyophilized. Cell viability was determined using Alamar Blue method. Gene and protein expressions were determined by qRT-PCR and western blot analyses, respectively. RESULTS: EVO was found cytotoxic against the proliferation of hCRC cells. The IC50 value of EVO on DLD-1 cells was calculated as 254.3 µg/mL. In additon, it was found that EVO treatment was significantly decreased (21%; P=0.014) the BRAF1 protein expression as well as mRNA level. CONCLUSIONS: In this study, we have clarified the molecular mechanism of the cytotoxic effects of the fruit extract of V. opulus against hCRC. EVO could inhibit tumor growth via TGF-β, MAPK, wnt, and PI3K-Akt signaling pathways and might be a promising therapeutic agent against hCRC. This study was supported by TUBITAK (Project no: 217Z279) **Keywords:** Cell Signaling, Colorectal carcinoma, Gene Expresion, Protein Expression, Viburnum opulus

**P-033**
**INVESTIGATION OF CYTOTOXIC AND APOPTOTIC EFFECTS OF GANODERMA APPLANATUM EXTRACT IN HUMAN COLON CANCER CELL**

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BACKGROUND AND AIM: This study aims to examine the effects of Ganoderma applanatum methanol extract (GAME), which is in the group of medicinal mushrooms, on the proliferation of human colorectal carcinoma (hCRC) at the molecular level. METHODS: After GAME extraction by the maceration method, hCRC cells, DLD-1, HT-29 cells, and healthy colon epithelial cells, CCD18-Co were treated with various concentrations of GAME ranging from 0 to 250 µg/mL and incubated at 37°C for 48 hours. The mechanism of cell death was determined using flow cytometry with Annexin V-APC and 7-AAD dyes. RESULTS: The IC50 values of DLD-1, HT-29, and CCD18-Co cells were found to be 20.79 µg/mL, 140 µg/mL, and 189 µg/mL, respectively. In the apoptosis analysis, early apoptosis increased by 2% and late apoptosis by 4.6% in cells treated with GAME compared to the control group for DLD-1 cells. For HT-29, early apoptosis was increased by 59.1% and late apoptosis by 3.5% in cells treated with GAME compared to the control group. CONCLUSIONS: It was determined that GAME possesses selective and dose-dependent cytotoxicity against hCRC cells. In this context, the proliferation of hCRC cells was inhibited with a concentration below the cytotoxic value required for healthy colon epithelial cells. Furthermore, it has been found that GAME causes cells to die in a controlled manner, especially by promoting early apoptosis. The mechanism of apoptosis will be elucidated by gene and protein expression studies.
**Keywords:** Apoptosis, Ganoderma applanatum, Colon Cancer, Cytotoxicity

**P-034**
**EFFECT OF PHENANTROIMIDAZOLE ON CELL MIGRATION OF HUMAN COLORECTAL CARCINOMA CELLS**

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BACKGROUND AND AIM: Colon cancer the third cause of cancer-related deaths continues to be a serious health problem worldwide. Imidazole derivatives are frequently used in many cancer studies and other biological studies. These compounds have been used as biochemical and antimicrobial markers in recent years. This study aimed to investigate the cytotoxic effects of phenantroimidazole compound and their effects on the migration abilities of the human colorectal carcinoma cells. METHODS: The IC50 values of the phenantropimidazole compound were calculated from the sigmoidal plot of cell inhibition on human colon cancer cell (DLD-1) and human healthy colon epithelial cell (CCD-18Co) using Alamar Blue reagent. The migration abilities of the cells were determined by in vitro wound healing assay. Nf-κB, p53(TP53) protein and gene expressions, which are effective on migration, were determined by Western Blot and qRT-PCR methods, respectively. RESULTS: The IC50 values of phenantroimidazole in DLD-1 and CCD-18Co cells were found to be 5.5 µM and 49.1 µM, respectively. Phenantroimidazole reduced the cell migration rate 83% compared to the control group. Phenantroimidazole increased Nf-κB protein and gene expressions 1.5-fold, 2.5-fold, respectively. Besides p53 protein and gene expressions were upregulated 1.2-fold and 4-fold, respectively. CONCLUSIONS: As a result, it was found that phenantroimidazole dose-dependently inhibited the proliferation of DLD-1 cells and significantly ($p<0.0001$) inhibited the migration rate of cells by upregulating Nf-κB and p53(TP53) protein and gene expressions.
**Keywords:** Cell Migration, Colon Cancer, Cytotoxicity, Phenanthroimidazole

**P-035**
**EFFECTS OF NUTRACEUTICALS ON BREAST CANCER CELL LINE PROLIFERATION**

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BACKGROUND AND AIM: Treatments for cancer include surgery, chemotherapy, radiotherapy, hormonal therapy, and targeted therapies (such as immunotherapy, monoclonal antibody therapy). As a result of conventional treatments applied, the resistance of cancer cells to treatment is among the research topics that keep up to date. Many of the anticancer drugs damage healthy cells as well as malignant cells and show toxic effects. In order to increase the effectiveness of conventional anti-cancer treatment methods, nutraceuticals used in different cancer types are used in the treatment of metabolic and neurological diseases, especially in various inflammatory diseases. The aim of the study was to examine the effect of nutraceuticals, which are widely used in phytotherapy, on breast cancer cell line proliferation. METHODS: HER2+ breast cancer cell line SKBR3 was grown in cell culture medium. Curcumin, sulforaphane, apocarotenal, Helichrysum arenarium, Lycopodium clavatum, Thymus serpyllum, were added to the SKBR3 at different doses and incubated for a spesified time. The effect of incubated nutraceuticals on cell proliferation was examined by MTT assay. In this way, the IC50 values of various agents were calculated and their efficacy was compared. RESULTS: From our MTT assay and Icelligence results, we observed all of the nutraceuticals used in this study had effects on SKBR3 proliferation. We also observed that curcumin, sulforaphane, and apocarotenal has different effects on proliferation in 12 day time period which are examined by Icelligence technique. CONCLUSIONS: Six different nutraceuticals were used in this study and all of them showed various effects on SKBR3 proliferation.
**Keywords:** Breast cancer, nutraceuticals, MTT assay, proliferation.

**P-036**
**COMPARISON OF CYTOTOXIC EFFECTS OF P. VERA ON BREAST CANCER CELL LINE WITH DIFFERENT METHODS**

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BACKGROUND AND AIM: The cancer treatment agents used are toxic to normal tissues. There is a need for more potent agents that reduce the dose of the standard treatment used in breast cancer. The efficacy of P. Vera has been tested in several cell line studies around the world. MTT is the most widely used method in the literature for determining the effective concentrations of anticancer agents (although errors are observed). Commercially used WST-based methods work on the basis of evaluating the absorbance of the formazan product formed by the reduction of dehydrogenases in living cells. However, these kits are always a problem in research budgets due to their cost. The objectives of the study is a) to determine the concentrations with more stable, cheaper costs by modifying the MTT method, b) to test the efficacy of the inner bark of P. Vera as an anticancer drug candidate on a breast cancer cell line. To compare the effect of breast cancer standard treatment (Doxotaxel-DOX-) on oxidative stress. METHODS: MDA-MB-231 breast cancer cell line was used in our study. For cell vitality tests (Cytotoxicity Analysis), Standard MTT, Modified MTT and CCK-8 (Commercial kit) methods were compared. These tests were performed to determine the cytotoxic response of cells after treatment with DOX and P.Vera. Herb; It was applied at different concentrations and as two different region extracts. Cell viability was measured after 48 and 72 hours in a microplate reader. Oxidative stress index was analyzed using Total Oxidant and Antioxidant Status kits. RESULTS: The efficacy of the plant extract and DOX used in cytotoxicity experiments were compared. The stability of the modified MTT method was found to be statistically significantly compatible with the CCK-8 method. It was observed that the modified MTT method had better results than the standard MTT method in all measurements. The effects on oxidative stress in combination with standard therapy were studied. CONCLUSIONS: It has been shown that the “Modified MMT” method is superior to the “standard MTT” method in terms of reliability and stability. In the OSI index; It was determined that the use of the extract together with standard treatment increased the oxidative stress index statistically.
**Keywords:** P. Vera, MTT, Modified MTT, Inhibitor concentration, Total Oxidative Status

**P-037**
**EXAMINING THE BASIC FIRST AID APPLICATION KNOWLEDGE OF THE HEALTH PERSONNEL WORKING IN THE MEDICAL LABORATORY**

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BACKGROUND AND AIM: How important it is for a laboratory providing analysis service to obtain accurate and reliable results, employ qualified personnel and define employee competence, it is equally important to ensure the safety of the laboratory staff and the environment. Therefore, health personnel in medical laboratories should have sufficient knowledge and skills to apply first aid to a possible accident. Our aim is to examine the knowledge level of health personnel in medical laboratories about applying first aid in accidents that occur in the laboratory, and to make suggestions to laboratory personnels. METHODS: Questionnaire used to collect data for research. It has been prepared consider the “Laboratory Safety Handbook” and “Basic First Aid Practices

Training Book". The sample of the study consists of 62 health personnels in the Medical Laboratory. The data were collected with the "Basic First Aid Practices knowledge level questionnaire" consisting of 48 questions and three different categories. Data are calculated as a percentage of "true and false". RESULTS: According to the answers given by the participants, they gave correct answers for 66.53 % in the category of warning signs, 91.02 % of definitions and general knowledge and 83.87 % in the category of application information. CONCLUSIONS: It is seen that there are deficiencies in basic first aid information in general. Especially, it is envisaged that the deficiency in the category of warning signs will be eliminated by training medical laboratory personnels on the subject at certain periods by experts and improving the information.
**Keywords:** first aid, laboratory safety, medical personnel, medical laboratory.

**P-038**
**EVALUATION OF THE PREANALYTICAL PHASE IN TERMS OF LABORATORY MEDICINE ETHICAL CODES**

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BACKGROUND AND AIM: Current ethical approaches to general medical practice must also be included in our daily routine for laboratory medicine. Medical Ethics reports start with the Nuremberg Law in the historical development process and continue in the Geneva Declaration, Helsinki Declaration, and Belmont report. Laboratory medicine practices, as in all other medical fields, must comply with general medical ethics rules. This study will focus on what national and international laboratory ethics-oriented guidelines include, especially in terms of the preanalytical phase. METHODS: It aims to examine whether we can apply the ethical rules of laboratory medicine in our current laboratory practices through examples. Root cause analyses of some preanalytical errors we experience in our laboratory will be examined within laboratory medicine ethical codes. Finally, the answer to what can be improvements in terms of corrective actions will be sought. RESULTS: The phlebotomy step is critical in preanalytical phase risk management, and zero tolerance for identification errors is the basic principle. In national and international laboratory ethical codes, the sample labeling process is regulated in the patient safety priority approach to preventing identification errors. Tubes that do not contain patient identifiable information as described in the guidelines in today's preanalytical processes pose a risk in patient safety. LIMS systems cannot help the laboratory specialist to implement patient safety and ethical codes fully. There is a risk of sample traceability and stability management. CONCLUSIONS: National and international hospital quality management systems give the first-degree follow-up and improvement responsibility of the preanalytical process to laboratory specialists. On the other hand, in today's global laboratory management models, preanalytical error management will only be possible with error-free management, especially in the field of "informational technology management," where the laboratory specialist is not fully effective and competent. At this point, health policymakers and laboratory specialists may re-examine the laboratory ethical codes and perhaps seek new trajectories, enabling us to achieve preanalytical process management with patient safety.
**Keywords:** preanalytical phase,ethical codes,safe phlebotomy

**P-039**
**INVESTIGATION OF REQUESTING PROFILE OF THYROID FUNCTION TESTS IN DISTRICT STATE HOSPITAL**

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BACKGROUND AND AIM: Thyroid function tests (TFT) are the most frequently requested endocrine tests from clinical laboratories. The most frequently requested tests in TFT are serum thyroid stimulating hormone (TSH), free triiodothyronine (fT3) and free tetraiodothyronine (fT4) tests. It is aimed to evaluate the test request tendencies applied by the clinics before the decision to switch to reflex testing for TFT in Turhal State Hospital. METHODS: The tests requested in the 6-month period between 01.01.2021 and 30.06.2021 in outpatients admitted to the hospital were taken from the automation system. Among these tests, TSH, fT3 and fT4 were examined and the simultaneous request rates of these tests were analyzed. RESULTS: In this period, a total of 29083 thyroid function tests were requested from 11627 patients, and only TSH in 1401 (12%) patients, TSH and free T4 in 2996 (25.8%) patients, and TSH, free T3 and free T4 together in 7230 (62.2%) patients. has been requested. CONCLUSIONS: Although the guidelines recommend the use of TSH test as a first step test for thyroid diseases, it has been seen that the algorithms are not taken into account sufficiently by the clinics. It is seen that this situation may be caused by clinical habits, as well as the high density of outpatients and if the algorithm is applied, it may be necessary to draw blood from the patient again and there is a concern about time loss. In our hospital, reflex testing has been planned because of both preventing unnecessary test requests and contributing to cost-effectiveness analysis.
**Keywords:** Cost-effectiveness analysis, Reflex test, Thyroid function tests

**P-040**
**ANALYSIS OF MITOTIC FUNCTIONS OF ENSA AND ARPP19 PROTEINS BY MOLECULAR GENETIC TOOLS**

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BACKGROUND AND AIM: Cdk1 kinase phosphorylates many protein substrates during mitosis to keep the cell in a mitotic state. Protein phosphatase 2A (PP2A) which reverses protein phosphorylations has to be temporarily inactivated during mitosis. To this end, Cdk1 phosphorylates and activates Mastl kinase, which, in turn, phosphorylates and activates ENSA and Arpp19 proteins. Either of these two phosphoproteins can bind to PP2A-B55∂ complex (PP2A isoform active in mitosis) and inhibit its enzymatic activity. As a result, the phosphorylations on mitotic proteins persist through mitosis. How mitotic division progresses, whether cells can divide correctly in the absence of ENSA and Arpp19, or whether overexpression of these proteins can rescue Mastl deficiency in Mastl KO cells are open questions waiting to be answered. METHODS: We aimed to investigate the mitotic division and cellular proliferation in primary mouse embryonic fibroblast (MEF) cells where Mastl gene can be conditionally knocked out via the Cre/Lox system, after overexpression of the predominant Arpp19 protein or after its depletion via shRNA mediated knockdown. Lentiviral and retroviral expression systems were used to get Arpp19 gene overexpressed or silenced. Subsequently, clonal cell lines were isolated and analysed. RESULTS: Silencing of Arpp19 expression inhibited cellular proliferation. Overexpression of WT or phosphomimetic forms of Arpp19 was not sufficient to rescue the effects of Mastl depletion. CONCLUSIONS: Primary MEFs need either of ENSA or Arpp19 inhibitory proteins to complete mitosis correctly. The fact that Mastl knockout cells cannot complete mitotic division even after high level expression of Arpp19 suggests, Mastl may have other roles unrelated to Arpp19.
**Keywords:** Cell cycle, mitosis, Mastl, Arpp19, ENSA, PP2A

**P-041**
**NONDELETIONAL ALPHA THALASSEMIA IN CUKUROVA REGION**

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BACKGROUND AND AIM: Alpha thalassemia is a genetic disease characterized by decreased or definite absence of alpha globin chain synthesis in the hemoglobin chain. Alpha globin chains are synthesized by the α1 and α2 genes in the short arm of chromosome 16. Each allele has two alpha globin (α1 ve α2) genes. A human has four alpha genes (αα/αα). The α-thalassemias usually result from deletions involving the α-globin genes, less commonly they are due to point mutations. Tree different large deletions [α-thal-1(--/αα:-17.4 kb,-20.5 kb and -26.5 kb)] and two small deletion[α-thal-2 (-α/αα:-3.7 kb and -4.2 kb)] were carecterized in Turkey. In addition, there are two different PolyA mutations (PA1:AATAAA/AATAAG and PA2:AATAAA/AATGAA) on the α2-globin gene (αα/αTα) and a 5nt deletion. There is also the Hb Adana point mutation on the α1-globin gene. In our country, ten different combinations of α-thal-1 and α-thal-2 (--/-α) or HbH genotype with point mutations (--/αTα or --/ααT) were determined. People with silent and heavy alpha gene deletions are completely healthy: But, HbH disease occurs in children with both mutant alleles by marrying those carrying these point mutations (α5ntα/α5ntα) and (αPolyAα/αPolyAα). HbH (β4) is found to have an unstable structure in the blood of individuals with only one intact alpha gene (--/αTα) carrying α-thal-1 and point mutations together. The aim of this study is evaluation of complete blood counts of individuals with nondeletional homozygous HbH. METHODS: DNA was isolated from the blood samples of patients with severe anemia (7.7<Hb<9.2, 60<MCV<70) who applied to Cukurova University, Balcali Hospital and showed Hb H band as a result of hemoglobin electrophoresis. Point mutations were determined by the ARMS method. RESULTS: In the study, as homozygous, two different point mutations were found in 7 patients (α5ntα/α5ntα), and in 4 patients (αPolyAα/αPolyAα). It was determined that one patient (--20,5/α5ntα) had large gen deletion and point mutations together. CONCLUSIONS: It was determined that the complete blood count of the patient with the combination (--20,5/α5ntα) was better than the homozygous PolyA and 5nt mutations.
**Keywords:** HbH, Alpha Thalassemia, Point mutation

**P-042**
**RECOMBINANT APPROACHES AND OPTIMIZATION OF EXPRESSION CONDITIONS FOR HIGH YIELD, SOLUBLE E3 ENZYME OF HUMAN ISGYlation SYSTEM (HSHERC5) FOR STRUCTURAL STUDIES**

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BACKGROUND AND AIM: The first line of defense against viral infection is implemented by the innate immune system regulated with interferons. One of the most important immune responses is utilized by type 1 interferons (IFN-1) to allow an antiviral response called ISGylation post translational modification system. Interferon-stimulated gene-15 (ISG15) is a protein with two Ubiquitin-like-domains (UBL) linked by a short peptide chain and it's the main protein of ISGylation system. Similar to Ubiquitin, ISG15 is ligated to the target proteins with a series of E1, E2 and E3 enzymes respectively. E1 enzyme is named as Uba7, E2 enzyme as UbcH8 and E3 enzyme as HERC5. It was found that HERC5 associates with ribosomes and ISGylation is executes together with translation. Due to its critical role in antiviral immunity, HERC5 is an important drug target for boosting innate antiviral immunity. However, protein structure of HERC5 is still not available, which makes it difficult to understand its relation with viral proteins and ribosomes. A High amount and purity of soluble protein is needed for structural studies. Obtaining soluble and high yield and amount of protein is one of the biggest challenges. METHODS: With this aim, different constructs of the protein were tested and a solubility tag was used. In addition, optimization of expression conditions are carried out. RESULTS: Within the scope of the study, it was observed that the GST tag increased the solubility but could not stop the degradation of the protein. The first 155 amino acids were omitted from the protein sequence to prevent protein degradation. Besides, temperature, medium and expression rate were optimized. CONCLUSIONS: The first 155 amino acids of the protein are thought to have a key role in ribosome binding. Since the protein cannot escape this binding, it is thought to be degraded after cell lysis. we aim to solve the structure of the protein soon.
**Keywords:** HERC5, ISGylation, post translational modifications, antiviral response

**P-043**
**OPTIMIZATION STRATEGIES FOR IMPROVING SOLUBLE EXPRESSION OF SARS-COV-2 S1 PROTEIN USING SUMO-FUSION TECHNOLOGY**

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BACKGROUND AND AIM: E. coli are widely used for recombinant protein development, due to its low cost, ease of manipulation, and availability of well established molecular tools and techniques. Due to a lack of sophisticated machinery to undertake posttranslational modifications, the E. coli bacterial culture is limited in its ability to express more complex proteins, resulting in low solubility of the protein of interest that is generated as inclusion bodies. Although we were able to produce the recombinant SARS-CoV-2 -S1 protein at high expression levels in our earlier investigation, we were also able to obtain nearly the whole protein as inclusion body. To overcome this problem, different solubility strategies have been tried. In this study, we developed an E.coli expression strategy based on the expression of the S1 protein as a fusion of SUMO fusion protein. METHODS: The DNA sequence of S1 protein was cloned into the pET SUMO expression vector, resulting in a construct expressing a N-terminal tag SUMO fusion protein. To achieve the high-level expression of S1, small scale expression conditions were optimized in E. coli BL21 (DE3) containing pET SUMO-S1 with different induction temperatures, times and IPTG concentrations. Additionally, different medium was also tested for the expression of S1 protein. For each parameter, solubility and expression of cell lysates from uninduced and induced cultures, plus the soluble and insoluble fractions from induced cultures were analyzed by SDS-PAGE and Western Blot. RESULTS: SDS-PAGE and Western Blot analysis showed the presence of a ~83 kDa recombinant fusion protein. The maximum level of expression of the recombinant protein was observed at 30 , 4 h after induction with 0,55 mM IPTG. CONCLUSIONS: This study showed that the use of SUMO fusion tag partially increases the production of S1 protein in the form of soluble fractions and optimization studies continue.
**Keywords:** Expression, Spike Protein, SUMO Fusion Tag,

**P-044**
**DEVELOPMENT OF DUAL-VALIDATION VOLTAMMETRIC/ IMPEDIMETRIC APTAMER-BASED BIOSENSOR FOR DETECTION OF CROHN'S DISEASE VIA CALPROTECTIN**

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BACKGROUND AND AIM: Inflammatory bowel diseases (IBD) are defined as inflammatory diseases in the gastrointestinal tract and has great clinical importance. In the absence of any treatment, it is important to follow up the chronic remission and attack states. Among these diseases, Crohn's subgroup constitutes the disease, and the disease can be followed by the determination of fecal calprotectin. METHODS: Biyosensor, sistamin ve avidin-biotin etkilesimi ile altin nanoparcacik uzerinde hareketsiz hale getirilen aptamer ile gelistirildi. Biyosensor, yanal akis testi (LFA) kadar dogru sonuclar verebilir. Olcum suresi kronoimpedimetrik olcum ile 900 saniye olarak belirlendi ve biyosensor lateral akis kalprotektin testi ile karsilastirildi. RESULTS: The detection range of the biosensor was determined as 20-800 µg/g, and LOD and LOQ 7.73 and 23.42 for linear scanning voltammetry (LSV) and 5.57 and 16.89 for electrochemical impedance spectroscopy (EIS). CONCLUSIONS: As a result, the calprotectin biosensor designed based on aptamer is very suitable for measuring this biomarker used in Crohn's disease.
**Keywords:** inflammatory bowel diseases, calprotectin, biosensor, aptamer

**P-045**
**EVALUATION OF FRESHNESS, NATURALNESS AND QUALITY OF HONEY PRODUCED IN DIFFERENT REGIONS OF TURKEY**

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BACKGROUND AND AIM: In this study, the amino acid and carbohydrate profiles, invertase enzyme activity (IEA) and 5-Hydroxymethylfurfural (HMF) levels of honey produced in different regions of Turkey were measured, thereby their compliance with the Turkish Food Codex in terms of freshness, naturalness and quality was investigated. METHODS: In October 2018, 10 types of honey obtained from different regions of Turkey were included in the evaluation. All honeys were kept at 20-25 oC in a moisture-free and dark environment until they were analyzed. Amino acid profiles of honeys at 0, 1, 4 and 7 months were measured with GC-MS, carbohydrate profiles and HMF levels were measured with HPLC and IEA levels were measured with the spectrophotometer. The results obtained were compared with the safe consumable limit values determined by the Turkish Food Codex RESULTS: Approximately 48% of the total amino acids in all honeys at the 0th month consisted of proline. It was determined that proline and phenylalanine levels, which are quality indicators of aging honey, decreased significantly at the end of the 7th month, whereas glycine levels increased over time ($P<0.01$). It was determined that HMF concentrations increased proportionally with the storage time, while IEA decreased ($P<0.01$). In addition, HMF concentrations were found to be moderately negatively correlated with valine, asparagine and fructose/ glucose ratio (Sp r: -0.422, Sp r: -0.428 Sp r: -0.519; $P<0.01$, respectively). CONCLUSIONS: The high proline, phenyl alanine and IEA values of honey as well as the low HMF levels should be used together as an indicator of freshness and naturalness, which are quality elements. In addition, the increase of toxic components such as HMF in aging honey; shows that honey should be consumed without long-term storage.
**Keywords:** Honey, Fructose, 5-Hydroxymethylfurfural, Proline

**P-046**
**EXAMINING THE NUTRITION STATUS OF SPINAL MUSCULAR ATROPHY PATIENTS AND ESTABLISHING NUTRITIONAL APPROACHES FOR THE SUBTYPES OF THE DISEASE**

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BACKGROUND AND AIM: Spinal muscular atrophy (SMA), a neurodegenerative disease, is a cause of premature death. Although nutritional complications and digestive system problems are frequently encountered, a special nutrition plan cannot be applied due to lack of nutritional studies in SMA. In this study, we aimed to establish a nutritional approach to SMA and to reduce complications related to nutrition. METHODS: A total of 8 patients, aged 0-22, registered to SMADER and diagnosed with SMA Type1,2 and 3 participated in the study. Data were collected between March2021-May2021 through an online questionnaire. The answers with negative effects to the patient were scored as 0, neutral effects as 1, and the positive effects as 1-5 points. RESULTS: Malnutrition a decrease in oral nutrition due to reasons such as aspiration and dysphagia was observed in 7 (87.5%) of the participants. One SMA patient without malnutrition, was also found to be only participant followed by a dietitian. CONCLUSIONS: The decrease in oral food intake is thought to cause nutrient requirements not to be met and thus malnutrition. However, ketoacidosis, which is generally seen as a result of inadequate nutritional intake, was not observed in our patients, which could be that although the Type1 SMA patients in the study were malnourished, they did not have a carbohydrate deficiency that would cause ketoacidosis. As the result of the study, we showed that adequate carbohydrate and protein intake is of extra importance for SMA patients, and detailed studies are needed to elucidate the factors cause malnutrition and prevent reaching the targeted energy requirement.
**Keywords:** Spinal muscular atrophy, ketoacidosis, malnutrition, nutrition

**P-047**
**HESPERIDIN ATTENUATES SODIUM SELENITE-INDUCED CATARACTOGENESIS IN WISTAR RATS**

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BACKGROUND AND AIM: Cataract, known as opacification of the lens in the eye, is one of the causes of blindness worldwide. The aim of this study was to investigate the potential protective effects of hesperidin (HES) in an experimental cataract model with sodium selenite (Na2SeO3) in male Wistar rats. METHODS: Thirty-two Wistar-albino rat pups were assigned into four groups. Group 1: Only saline (0.9 % NaCl) was administered by subcutaneously (s.c), Group 2: Nuclear cataract was produced single dose 20 µmol/kg s.c. Na2SeO3 on the postnatal 10th day, Group 3: HES was dissolved in saline solution and 100 mg/kg was administered by oral gavage for 4 weeks. Group 4: Na2SeO3 (20 µmol/kg) was given s.c. and HES (100 mg/kg) was given by oral gavage. The reduced glutathione (GSH), malondialdehyde (MDA) and total antioxidant status (TAS) in lens supernatants were measured spectrophotometrically. Data were analyzed using the SPSS software package. One-way ANOVAs followed by post-hoc Bonferroni tests were used for statistical analysis ($p < 0.05$). RESULTS: It was observed that GSH and TAS levels decreased in the Na2SeO3 group compared to the control group, while MDA levels increased significantly. While no significant change was observed in GSH and TAS levels in the HES group compared to the control group, MDA levels decreased significantly. At the same time, GSH and TAS levels were significantly increased in the Na2SeO3+HES group compared to the Na2SeO3 group, while MDA levels were significantly decreased. CONCLUSIONS: Although it was observed in our study that hesperidin had positive effects on MDA levels, which is a marker of oxidative damage, in the cataract model, further studies on hesperidin are needed.
**Keywords:** Cataract, Lens, Hesperidin, Oxidative damage, Sodium selenite

**P-048**
**DETERMINATION OF OXIDATIVE DAMAGE CAUSED BY METHOTREXATE AND 5-FLUOROURACIL IN LIVER, HEART AND KIDNEY TISSUES IN RATS**

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INTRODUCTION AND AIM:Fluorourosil (5-FU) is used as a chemotherapy drug in many types of cancer and is a pyrimidine analog. Methotrexate (MTX) is used as a chemotherapeutic agent in many diseases from autoimmune system diseases to cancer. In addition to its therapeutic properties, it causes damage to organs such as liver and kidney. In this study, it was aimed to determine the oxidative damage caused by Sprague Dawley rats in liver, kidney and heart tissue. METHOD:In our study, 15 2-month-old male Sprague Dawley rats were divided into 3 groups. Group 1: Control group, Group 2: MTX group, Group 3: 5-FU group. One day after the application, the rats were anesthetized and liver, kidney and heart tissues were removed surgically after cervical dislocation. The levels of malondialdehyde (MDA), which is a marker of lipid peroxidation, nitric oxide (NO), a free radical, and reduced glutathione (GSH), which is an endogenous antioxidant, were measured in these tissues. Significantly low, MDA and NO levels were found to be significantly higher in the FU groups. Similarly, kidney GSH levels were significantly lower in the MTX and 5-FU groups compared to the control group, MDA was higher in both groups, and NO was higher in only the MTX group. GSH levels in heart tissue were found to be significantly lower in MTX and 5-FU groups, MDA was significantly higher, and NO was significantly higher only in the 5-FU group compared to the control group. DISCUSSION AND CONCLUSION:Conclusively, MTX and 5-FU It has been concluded that FU may cause oxidative damage in kidney, liver and heart tissue and cause changes in oxidative damage markers and antioxidant levels.
**Keywords:** Malondialdehyde, Methotrexate, Nitric Oxide, Oxidative Damage, Reduced Glutathione

**P-049**
**OXIDATIVE DNA DAMAGE, GLUTATHIONE REDOX STATUS AND THEIR RELATION WITH DNA REPAIR GENE HOGG1 POLYMORPHISM IN HYPERTHYROIDISM**

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BACKGROUND AND AIM: Hyperthyroidism is associated with oxidative stress. Oxidative DNA damage may contribute to the development of some complications in patients with hyperthyroidism. DNA repair protein, human 8-oxo-deoxyguanosine DNA glycosylase 1 (hOGG1), is the enzyme which is responsible for the removal of oxidative DNA damage. This study aims is to examine the role of hOGG1 Ser326Cys polymorphism on DNA strand breaks, oxidized purines, urinary 8-OHdG level and glutathione redox status (GSH/GSSG ratio) in patients with hyperthyroidism. METHODS: The study included 58 patients undergoing total thyroidectomy due to hyperthyroidism and 65 volunteers as control. DNA strand breaks and oxidized purines in lymphocytes were detected by comet assay, erythrocyte GSH and GSSG levels and urinary 8-OHdG level were measured by spectrophotometric method and enzyme-linked immunoassay (ELISA), respectively. hOGG1 Ser326Cys genotyping was performed by polymerase chain reaction-restriction fragment length polymorphism assay (PCR-RFLP). RESULTS: DNA strand breaks and oxidized purines were higher in the patients with hyperthyroidism than those in the control cases. There are no significant changes in GSH/GSSG ratio and urinary 8-OHdG. No significant difference was found between cases carrying Ser/Ser genotype and cases carrying Ser/Cys + Cys/Cys genotype for tested parameters in patients with hyperthyroidism. CONCLUSIONS: Oxidative DNA damage, in the term of strand breaks and oxidized purines, is increased in patients with hyperthyroidism but oxidative DNA damage status is irrelevant with hOGG1 Ser326Cys polymorphism in these patients.
**Keywords:** Antioxidant defence, Hypertiroidism, hOGG1, Ser326Cys polymorphism

**P-050**
**EFFECTS OF OXIDATIVE STRESS-RELATED BIOCHEMICAL MARKERS ON DISEASE PROCESS IN PATIENTS WITH ADVANCED LUMBAR SPONDYLOLISTHESIS**

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BACKGROUND AND AIM: One of the most common complaints in clinical practice is low back pain and accompanying spinal degenerative diseases. Oxidative stress is assumed to play an important role in the degenerative process. In this study, the oxidative stress level in the interspinous ligament tissue of patients with spondylolisthesis and the effects of related biochemical markers on the patient's clinic were investigated. METHODS: Patients with degenerative spondylolisthesis, lumbar spinal stenosis, and spinal trauma under the age of 40, who applied to the Neurosurgery clinic at Mugla Sitki Kocman University Training and Research Hospital and diagnosed with surgery were included in this study. Interspinous ligament tissue samples, which were removed during surgical decompression and turned into medical waste, were used from all patients whose written consent was obtained. These patients were divided into three groups as lumbar spondylolisthesis (LSL) patients (n=14), lumbar spinal stenosis (LSDK) (n=14) and young trauma patients (n=10). A power analysis of the number of patients yielded an 80% confidence level and a 5% margin of error. Superoxide dismutase, total sulfhydryl, and AOPP levels were determined using a spectrophotometric method in the collected interspinous ligament samples. RESULTS: In our study, SOD enzyme (p=0.496) activity, total sulfhydryl (p=0.260) and AOPP (p=0.365) levels were not found statistically significant between the groups. Although there was no statistically significant difference, when we analyzed the SOD values, it was found that the lowest value was in the trauma group and the highest value was in the LSL group. The total sulfhydryl values also showed that the LSDK group had the highest values and the trauma group had the lowest. While AOPP levels were highest in the trauma group, they were the lowest in LSL patients. CONCLUSIONS: In this study, oxidative stress markers were studied for the first time in interspinous ligament samples. Although results were not statistically significant; The high SOD and total sulfhydryl values as well as the low AOPP values, implying that it may play a protective role in the ongoing inflammatory process in these degenerative diseases. Further studies in a large patient group are needed to understand the effects of oxidative stress on lumbar spondylolisthesis.
**Keywords:** AOPP, interspinous ligament, lumbar spinal stenosis, lumbar spondylolisthesis, SOD, total sulfhydryl

**P-051**
**INVESTIGATION OF YKL-40/CHITINASE 3-LIKE PROTEIN 1 AND THIOL-DISULFIDE HOMEOSTASIS IN SERA OF CHILDHOOD CHRONIC KIDNEY PATIENTS**

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BACKGROUND AND AIM: Chronic kidney disease (CKD) refers to a condition associated with irreversible kidney damage that can progress to end-stage renal disease (ESRD). In this study, we aimed to measure human chitinase-3-like Protein 1 (YKL-40), oxidant/antioxidant status and thiol-disulfide homeostasis parameters in the sera of childhood chronic kidney patients and to investigate whether there is a relationship between the severity of the disease. METHODS: 25 peritoneal dialysis (PD) patients, 10 hemodialysis (HD) patients, 25 compensated chronic kidney disease (CKD) and 20 healthy individuals were included in the study as the control group. Serum YKL-40 levels were measured by ELISA method in the patient and control groups. The status of native thiol, total thiol, total antioxidant and total oxide were measured in an autoanalyzer (Beckman Coulter AU*480) using commercial kits. RESULTS: Creatinine, GFR, total oxidant status (TOS), total antioxidant status (TAS), oxidative stress index (OSI), Native thiol (Nthiol), total thiol (Tthiol), Disulfite, Disulfite/Nthiol, Disulfite/Tthiol, Nthiol When /Tthiol and YKL-40 values were found to be statistically significantly higher when compared with the control group, Nthiol, Tthiol, Disulfide and YKL-40 levels were found to be significantly lower ($p<0.05$). In addition, significant negative and positive correlations were detected between the parameters in each group. CONCLUSIONS: Our results suggest that the oxidant status increased in the patient groups and the addition of antioxidant substances would be beneficial in addition to the treatment applied.
**Keywords:** Childhood Chronic Kidney Disease, Dialysis, Oxidative Stress, Thiol Disulfide, YKL-40

**P-052**
**INVESTIGATION OF OXIDATIVE STRESS METABOLISM IN CENTRAL NERVOUS SYSTEM AND PERIPHERAL TISSUE IN SOD1G93A ALS RATS**

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BACKGROUND AND AIM: ALS is the most common motor neuron disease and incidence of the disease is increasing worldwide. Since there is no treatment for ALS, targeting therapy approaches are urgently required to cure people with ALS. In our study we have investigated oxidative stress metabolism in the CNS and peripheral tissue as possible targeted therapy approach. METHODS: SOD1G93A mutated male rats were divided into 5 groups based on the age and each group divided into two subgroups according to the mutation as wild type and G93A mutated. Tissues were collected after sacrification and oxidative stress enzymes were measured in the tissues. RESULTS: Glucose-6 phosphate dehyrogenase (G6PD) and 6-phodphoglucanate dehydrogenase (6-PGD) enzymes were decreased in the liver and brain tissues of mutated rats compared to the wild type rats. On the other hand, glutathione reductase (GR) enzyme activities decreased in the mutated rats in the brain and liver tissues compared to the wild type rats, where glutathione s-trabsferase activity (GST) increased in the mutated rats. Our data showed that oxidative stress metabolism impaired in the brain and liver tissues of the SOD1 G93A mutated rats. CONCLUSIONS: Our data showed that oxidative stress metabolism is impaired in the SOD1 G93A mutated rats compared to the wild type rats, that can be used for the possible targeted therapy approaches to treat people with ALS.
**Keywords:** ALS, oxidative stress, liver, brain

**P-053**
**EVALUATION OF THE RELATIONSHIP BETWEEN OXIDATIVE STRESS AND RAFTLIN LEVELS IN WOMEN WITH POSTMENOPAUSAL OSTEOPOROSIS**

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BACKGROUND AND AIM: Postmenopausal osteoporosis is a disease in which the tendency to fracture in bones increases due to decreased bone mineral density. Oxidative stress is an important risk factor for osteoporosis. Raftlin is known to play a role in the vascular endothelial response in postmenopausal osteoporosis patients. There are studies on antioxidant enzyme activities and oxidative stress markers in the literature, but there is no study comparing the levels of Raftlin with oxidative stress levels. The aim of this study is to compare oxidative stress, antioxidant response and Raftlin levels between postmenopausal osteoporosis patients and the control group. METHODS: Postmenopausal women with or without osteoporosis (n: 40) and healthy controls (n:30) who applied to the Gynecology and Obstetrics Clinic of KSU Faculty of Medicine between January 2019 and September 2020 were included in our study. Bone mineral density, routine laboratory tests, 25-hydroxyvitamin D3, raftlin, catalase (CAT), superoxide dismutase (SOD) and malondialdehyde (MDA) levels were measured in our study groups. CAT, SOD and MDA levels were measured by spectrophotometric method, Raftlin levels were measured with a commercial ELISA kit. RESULTS: It was determined that Raftlin and MDA levels were significantly increased in both postmenopausal groups compared to the control, while SOD and CAT were significantly decreased ($p<0,05$). The lowest antioxidant enzyme activity and the highest MDA and raftlin levels were detected in postmenopausal osteoporosis patients ($p<0,05$). Moreover, a positive correlation was found between raftlin levels and MDA levels ($r=0.395$, $p<0.001$). CONCLUSIONS: These results show a relationship between osteoporosis and oxidative stress. It is thought that free oxygen radical production increases excessively in both postmenopausal groups and accordingly, antioxidant enzyme activities decrease. It is also thought that MDA and raftlin levels increase. In addition, Raftlin, a new marker, may be an important parameter in determining the prognostic process of groups with postmenopausal osteoporosis.
**Keywords:** Postmenopausal, Osteoporosis, Oxidative Stress, Raftlin

**P-054**
**THE EFFECT OF PLANTAGO MAJOR ON HEART TISSUE OXIDANT / ANTIOXIDANT SYSTEM AND SOME BLOOD PARAMETERS IN RABBITS WITH HYPERCHOLESTEROLEMIC DIET INDUCED ATHEROCLEROSIS**

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BACKGROUND AND AIM: The aim of this study was to investigate the effects of plantago major extract on heart tissue oxidant/antioxidant system and some blood parameters in rabbits fed with hypercholesterolemic diet to induce atherosclerosis. METHODS: Twenty-six male albino New Zealand rabbits were divided into five groups: The first group was assigned as Control group (n=6), the second group as Cholesterol group (n=5) and the remaining three groups as Plantago Major extract (PME) groups (n=5 in each). Saline to Control group, cholesterol (1 g/kg/day) to Cholesterol group and PME in addition to cholesterol to the three PME groups at the doses of 0,1 (low); 0,5 (medium) and 1,0 (high) g/kg/day were administered orally for 12 weeks. Nitric oxide synthase (NOS), glutathione peroxidase (GSPx), catalase (CAT), superoxide dismutase (SOD), xanthine oxidase (XO) enzyme activities and nitric oxide (NO) and malondialdehyde (MDA) levels were measured in heart tissue samples of the animals. Triglyceride, total cholesterol and cholesterol fractions, blood urine nitrogen, creatinine, alanine and aspartate aminotransferases were also assayed in serum samples. Additionally, histopathological examination of heart tissues in each group was done. RESULTS: As to the heart tissue NOS, GSPx, CAT, SOD, XO enzyme activities with NO and MDA levels and serum lipid parameters with liver and kidney function tests, there were no statistically significant differences between the groups other than controls. In the histological examination of heart tissue samples; connective tissue proliferation, hemorrhage and lipid vacuoles between muscle fibers were observed in cholesterol and three PME groups. There were no remarkable differences between cholesterol and PME groups compared to the histological findings. CONCLUSIONS: In conclusion, oral administration of cholesterol alone and cholesterol plus PME were observed to have (as to the parameters measured in this study) no statistically significant effect on rabbit heart tissue oxidant / antioxidant system. Oral cholesterol administration caused some derangements in rabbit heart tissue which are evaluated to have no relation with oxidative mechanisms. Addition of PME to the diet did not exert any preventive effect against hypercholesterolemia induced derangements in the tissue.
**Keywords:** hypercholesterolemia, heart, oxidant/antioxidant status, plantago major, rabbit.

**P-055**
**INCREASED OXIDATIVE STRESS IN CHILDREN WITH AUTISM SPECTRUM DISORDER**

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BACKGROUND AND AIM: Autism is a disorder that manifests itself with the difficulties of the child in social relations and communication in early childhood and can affect all areas of development throughout life. In our study, we aimed to investigate whether thiol disulfide balance, which is a new marker of oxidative stress, is different from normal children in children with autism spectrum disorder. METHODS: A total of 88 children, 44 with autism spectrum disorder and 44 healthy controls, were included in the study. Dynamic thiol balance, total oxidant status, total antioxidant status, ischemia modified albumin, paraoxonase 1 and arylesterase activities were measured by colorimetric methods. RESULTS: In the experimental group with autism spectrum disorder, compared to the control group; lower levels of paraoxonase 1, total thiol and native thiol ($p < 0.05$); higher levels of ischemia modified albumin, total oxidant state and high oxidative stress index ($p < 0.05$) were determined statistically significantly. CONCLUSIONS: There is a significant relationship between autism spectrum disorder and oxidative stress increase, antioxidant capacity decrease and dynamic thiol balance. If these data are supported by newly multi-center studies with wider participation, it can be expected that the dynamic thiol balance and other related parameters will come to the fore as laboratory markers in the etiology, diagnosis and treatment follow-up of autism.
Note: This work was supported by ALKU BAP with the project numbered 2020-04-01-MAP03.
**Keywords:** Autism spectrum disorder, dynamic thiol balance, oxidative stress, antioxidant status.

**P-056**
**MAPK SIGNALING PATHWAY AS BIOMARKER OF HYPERTENSION**

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BACKGROUND AND AIM: Hypertension adversely affects the health of many people worldwide and is fatal. Aldosterone is a hormone associated with cardiovascular disease. The most important enzyme of aldosterone biosynthesis is aldosterone synthase, and MAPK3, ERK, ELK, and LNPEP genes are also involved in aldosterone metabolism. The aim of the study is to investigate the effects of miRNAs on aldosterone metabolism, as well as to reveal the ways of use in the diagnosis and treatment of aldosterone-related diseases. METHODS: First, a rat model of hypertension with increased aldosterone levels was created. The relationship between gene(44700 genes) and miRNA(17200 miRNA) expressions in kidney and heart tissues obtained from rat models was explained by microarray analysis and miRNA sequencing studies. Statistically significant changes were observed in 3747-transcripts in kidney tissue and 2705-transcripts in heart tissue($p<0.05$). Genes and miRNAs with significant level differences were selected and their gene expression was validated by qRT-PCR. RESULTS: While serum aldosterone concentration was 289.4 pg/mL before the experiment in the ALDO group, it increased to 623 pg/mL after the experiment(2.15-fold). In addition, systolic blood pressure was measured as 164±2 mmHg in the ALDO group(***<p 0.0001). Induction of aldosterone resulted in significantly increased expression of many genes related to aldosterone biosynthesis in rat kidney tissues. In particular, mRNA expressions of LNPEP and MAPK pathway members MAPK3, ELK and ERK1/2 genes were statistically increased. CONCLUSIONS: As a result of this study, elucidating the correlation between genes in the MAPK signaling pathway and miRNA expressions also helped to elucidate the aldosterone signaling pathway.
**Keywords:** Aldosterone synthesis and metabolism, Kidney-associated hypertension, MAPK signaling pathway, miRNA

**P-057**
**EVALUATION OF THE EFFECT OF MESENCHYMAL STEM CELLS ON PROGRESSION OF CHRONIC RENAL DISEASE IN RATS BY ADIPONECTIN**

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BACKGROUND AND AIM: Chronic kidney disease (CKD), which can be defined as a chronic and progressive deterioration in the metabolic functions of the kidney as a result of a decrease in the glomerular filtration value, is a global disease. Current treatments are not very successful in identifying the main causes underlying the progression of renal disease. Mesenchymal stem cell (MSC) therapy offers promising results for regeneration of kidney damage. Measurable biomarkers are of great importance in demonstrating the therapeutic effects of MSCs. Adiponectin is one of the recommended biomarkers for CKD. In our study, the effect of MSCs in chronic kidney disease will be examined through adiponectin. METHODS: In our study, firstly, mesenchymal stem cells were isolated from the amniotic membrane of human term placenta, and then the cells obtained were characterized by flow cytometry and directed to osteocytes, chondrocytes and adipocytes. In order to form the experimental groups, 5/6 nephrectomy was performed by removing the right kidney completely two weeks after the left kidneys of Wistar male rats were ligated. MSC injection was applied to the groups that underwent 5/6 nephrectomy. Protein levels of adiponectin were determined by western blot method and mRNA expressions were determined by Real-time PCR method in all groups. Urine and serum levels of adiponectin were measured by ELISA method. RESULTS: While an increase was observed in adiponectin protein and mRNA expressions in the nephrectomy group compared to the control groups, a statistically significant decrease was determined in the stem cell injected groups after nephrectomy compared to the patient groups that were not given stem cells. In addition, a significant increase was observed in serum adiponectin levels in stem cell groups, while a significant decrease was observed in urine adiponectin levels. CONCLUSIONS: Adiponectin, a measurable biomarker in blood and urine, has an important role in the progression of chronic kidney disease. The findings of our study may be useful for experimental and clinical studies related to MSCs in therapeutic intervention in CKD.
**Keywords:** Mesenchymal stem cell, chronic renal disease, adiponectin

**P-058**
**DETERMINATION OF REFERENCE RANGES OF SERUM COPPER AND ZINC LEVELS IN HEALTHY INDIVIDUALS IN IZMIR BY ATOMIC ABSORPTION SPECTROPHOTOMETER AND COLORIMETRIC METHOD AND COMPARISON OF MEASUREMENT METHODS**

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BACKGROUND AND AIM: Serum copper and zinc levels are very important for a strong immune system. In this study, it was aimed to determine the reference ranges of serum copper and zinc levels in healthy individuals in Izmir by atomic absorption spectrophotometer and colorimetric method and to compare the measurement methods. METHODS: In this study, 75 healthy women and 75 men, aged 18-41 years and determined according to the inclusion criteria, were included. Serum copper and zinc levels were determined in blood samples taken by atomic absorption spectrophotometric and colorimetric methods. In the second phase of the study, method comparison experiments were performed in accordance with the "Patient Based Method Comparison Guide" of CLSI. RESULTS: The reference range for serum copper concentrations measured in the AAS is 51.77-195.88 mmol/L. The reference range for serum zinc concentrations measured in the AAS is 63.42-120.5 mmol/L. The reference range for spectrophotometrically measured serum copper concentrations is 63.89-150.35 mmol/L. The reference range for spectrophotometrically measured serum zinc concentrations is 68-115.91 mmol/L. Reference range for copper; it is 66-144.8 mmol/L in men and 64-241.2 mmol/L in women. Reference range for zinc; 60.86-98.6 mmol/L in men and 54-96 mmol/L in women. CONCLUSIONS: Reference ranges of serum copper and zinc levels in healthy individuals in Izmir were determined by both atomic absorption spectrophotometer and colorimetric method. These ranges were found to be in agreement with existing reference ranges. As a result of the comparison experiments of measurement methods, no significant difference was found.
**Keywords:** Copper, Zinc, Reference range, Method comparison

**P-059**
**DEVELOPMENT OF A RAPID AND SENSITIVE LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY MEASUREMENT METHOD FOR VILDAGLIPTIN**

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BACKGROUND AND AIM: Vildagliptin is an orally active and selective dipeptidyl peptidase-4 (DPP-4) inhibitor developed for the treatment of type-2-diabetes. Vildagliptin, stimulate insulin secretion by preserving endogenous incretin hormones, glucagon-like-peptide-1 and glucose dependent insulinotropic polypeptide. Nasopharyngitis, headache and dizziness are the most common adverse effects associated with vildagliptin. The use of vildagliptin is associated with increased risk of pancreatitis. Plasma vildagliptin concentration should be in the range of 10-50 ng/ml for an effective treatment. The aim of this work was to develop a simple, rapid and sensitive liquid chromatography-tandem mass spectrometric (LC-MS/MS) method for quantitation of vildagliptin. METHODS: Briefly; 250 µL of sample was taken into eppendorf tubes and 100 µL of internal standart and 800 µl acetonitrile were added. The mixture was vortexed during 30 seconds and centrifuged at 12000rpm for 10 minutes. The supernatants were taken into clean glass tubes and dried under nitrogen gas at 40°C. The dried residues were dissolved in 200 µl acetonitrile:water (10:90,v/v%) mixture. 30 µL was injected. Vildagliptin was detected by ABSciex API 3200 tandem mass spectrometery. RESULTS: The developed method was linear in the concentration range of 2-1000 ng/ml. The intra- and inter-assay imprecisions were less than 10%. The limit of determination (LLOQ) was 2 ng/mL. The mean extraction recovery was 93.4%, while matrix effect values were less than 12.5%. Total run time was 5 minutes. CONCLUSIONS: A practical, economical and reliable measurement method has been developed to measure vildagliptin levels. The method may be used for routine analysis of vildagliptin.
**Keywords:** Therapeutic drug monitoring, mass spectrometry, vildagliptin, adverse effect.

**P-060**
**DEVELOPMENT OF LC-MS/MS METHOD FOR MEASUREMENT OF DIRECT ETHANOL BIOMARKERS ETHYL GLUCURONIDE (ETG) AND ETHYL SULFATE (ETS) IN URINE AND SERUM FOR DETECTION AND MONITORING ALCOHOL USE**

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BACKGROUND AND AIM: Ethyl glucuronide (EtG) and ethyl sulfate (EtS) are minor non-oxidative metabolites of ethanol. They can be detected in body fluids shortly after ethanol consumption and have a longer detection window than the parent compound. They are considered highly sensitive and specific biomarkers for recent alcohol consumption. EtG and EtS biomarkers are often used in the clinical and justice system to monitor alcohol withdrawal. In this study, it was aimed to develop an easy and cost-effective analysis methodology that provides the qualitative and quantitative detection of EtG and EtS in urine and serum matrices. METHODS: For the simultaneous quantification of EtG and EtS biomarkers in urine and serum, an LC-MS/MS method with fast and reliable sample preparation protocols with 5 minutes analysis time has been developed and validated. Two product ions along with the precursor ions of both alcohol metabolites were monitored and the deuteron-derivative of EtG was used as an internal standard, for increasing the reliability of the results. RESULTS: The validation parameters and obtained values were investigated based on international guidelines. They were found within acceptable ranges. Thus, sensitive determination of EtG and EtS in urine/serum samples was achieved with a simple sample preparation protocol which could be automated. CONCLUSIONS: EtG and EtS are two ethanol metabolites that can be detected in serum up to 8 hours and in urine up to 96 hours after ethanol elimination. The presence of these direct alcohol biomarkers is indicative of recent ethanol consumption in the event of a sampling delay after an event (for example, a car accident). In studies where EtG and EtS were analyzed together to determine false negative and false positive cases, it was found that false negatives and false positives in EtG results were not found in EtS results. For this reason, it is recommended to work with EtG and EtS together.
**Keywords:** Alcohol Biomarkers, Ethyl Glucuronide, Ethyl Sulphate, Alcohol Use Disorder, LC-ESI-MS/MS

**P-061**
**ETHYL GLUCURONIDE IN MONITORING ALCOHOL USE**

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BACKGROUND AND AIM: Ethyl glucuronide (EtG) is a non-volatile, water-soluble metabolite of ethanol. It is formed as a result of enzymatic conjugation of ethanol with glucuronic acid. Etg can be detected for several days after the alcohol has been eliminated from the body. It is measured by enzyme immunoassay and chromatographic methods. It can be used together with ethanol, carbohydrate deficient transferrin (CDT), mean corpuscular volume (MCV), GGT measurement which are other short- and long-term markers of alcohol use. The administrative threshold for EtG is 500 ng/ml.
METHODS: EtG test results, which were studied with an automatic analyzer (Siemens, Dimension EXL) by immunochemical method, between January 2019 and August 2021 in the Medical Biochemistry Laboratory of İzmir Katip Çelebi University Atatürk Training and Research Hospital were evaluated retrospectively.
RESULTS: Evaluation was made in 6205 urine samples. EtG mean value was found 1014 (527-3546) ng/ml in 849 of these samples. Also, in192 of patients, Disialotransferrin which is indicator of chronic alcohol use were above 2.5% (2.5%-13.18%).
CONCLUSIONS: In previous studies, it was reported that ethylglucuronide urine levels were remained as high in 48 hours after alcohol intake. Due to this feature, EtG can be requested to evaluate the compliance to the treatment, especially in AMATEM patients who receiving inpatient treatment for chronic alcoholism, Apart from this, Etg can be requested for people who are followed by the amatem polyclinic for their driver's license. Although it is calibrating with 500 and 1000 ng/ml calibrators, it should not be ignored that it is a semi-quantitative test. If necessary, confirmation should be made by chromatographic method.
**Keywords**: alcohol, ethyl glucuronide, carbonhydrat deficient transferrin (CDT)

**P-062**
**QUALITATIVE AND QUANTITATIVE INVESTIGATION OF PHENOLIC SUBSTANCE COMPOSITIONS OF DRACAENA CINNABARI BALF. F. RESIN EXTRACTS OBTAINED WITH DIFFERENT SOLVENTS**

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BACKGROUND AND AIM: In this study, *Dracaena cinnabari* Balf. f. it was aimed to determine the types of phenolic substances extracted in different solvents and their amounts. METHODS: The substances we obtained as a result of the extraction were determined by the HPLC device of SHIMADZU (Japan-Tokyo) brand at Suleyman Demirel University YETEM-Applied Basic Sciences and Technologies Research Unit. RESULTS: In our research, *Dracaena cinnabari* Balf. f. in terms of phenolic substance profiles of extracts obtained from different solvents, the most diverse 5 phenolic substances are routine 1312.5(mg/g), p-hydroxy benzoic acid 1030.7(mg/g), syringic acid 965.8(mg/g), sinapinic acid 841.9(mg/g), gallic acid 80.4(mg/g) in distilled water extra fine, it was determined that grape vinegar extract has the least profile with 2 phenolic substances chlorogenic acid 15000.6 (mg/g), protocatechic acid 211.4(mg/g). Chloroform extract with 4 phenolic substances, apigenin 40944.7(mg/g), vanillin 97(mg/g), p-coumaric acid 55.2(mg/g), o-coumaric acid 41.2(mg/g), methanol In the extract, 3 phenolic substances benzoic acid 909(mg/g), ferulic acid 193.9(mg/g), caffeic acid 167.2(mg/g) were determined.In the ethanol extract, more types and amounts of substances were not found compared to other solvents. CONCLUSIONS: In the study, benzoic acid obtained from phenolics, the highest amount of methanol extract was 909(mg/g), and routine 1312.5(mg/g) was determined in distilled water extract.It was determined that ethanol extract was 19921,9(mg/g) and chloroform extract 40944.7(mg/g) and it was the most apigenin substance among all solvents, while chlorogenic acid was 150.6(mg/g) in grape vinegar extract. Undetectable substances in the extracts obtained in different solvents were determined to be quercetin, hesperidin, epicatechin, eriodictiol and catechin.
**Keywords:** {Dracaena cinnabari} Balf. f., Phenolic substance, Apigenin, Extraction, Analysis.

**P-063**
**DRACAENA CINNABARI BALF. F. TYPES OF CAROTENOID DETERMINED TO BE MOST FOUND IN EXTRACTS OF RESIN IN DIFFERENT SOLVENTS**

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BACKGROUND AND AIM: *Dracaena cinnabari* Balf. f. it was aimed to determine the most abundant carotenoid types and amounts of resin extracts in different solvents.
METHODS: When performing the Tocopherol analysis, *Dracaena cinnabari* Balf. f. 0.5 g of the resin samples were weighed, 20 ml of hexane was added and left for 1 night. The hexane mixture was filtered and the filtrate was transferred to the balloon and evaporated in the evaporator. The remaining oil in the balloon was removed and analyzed in the HPLC device. RESULTS: While there are no tocopherol substances found in higher amounts in the extracts of distilled water, chloroform and grape vinegar, which are solvents in the structure of *Dracaena cinnabari* Balf. f., compared to methanol and ethanol extracts, which are the other solvents used, alpha 0.23(µ) is the highest amount in ethanol. /g), the highest amounts of delta 2.10(µ/g), gamma 1.93(µ/g) and beta 0.36(µ/g) tocopherols were determined in tocopherol methanol solvent. CONCLUSIONS: In this study, the highest Delta 2.1(µ/g) carotene in methanol solvent, Alpha 0.23(µ/g) carotene in ethanol solvent, alpha 0.08(µ/g) in distilled water solvent, although not higher than other solvents. carotene, gamma 0.1(µ/g) carotene in chloroform solvent and beta 0.06(µ/g) carotene in grape vinegar solvent were determined in the highest amount. These analyzes will help to determine the active substance in future studies and to investigate the positive and negative effects of these active substances in diseases.
**Keywords:** {Dracaena cinnabari} Balf. f., Carotenoid, Delta Tocopherol, Extraction, Analysis.

**P-064**
**THE EFFECT OF QUERCETIN ON METABOLIC SYNDROME COMPONENTS IN RATS FED WITH HIGH FRUCTOSES**

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BACKGROUND AND AIM: Metabolic syndrome (MetS) is a multi-factorial disease characterized by insulin resistance, abdominal obesity, glucose intolerance, hyperglycemia, dyslipidemia, hypertension, coronary artery disease; it causes high morbidity and mortality with its cardiac and metabolic complications. At the beginning of the treatment goals of MetS, the control of risk factors that cause insulin resistance with lifestyle changes and healthy diet come first. The aim of the study; to investigate the protective and therapeutic role of quercetin on MetS components in high fructose fed rats. METHODS: In this direction, 24 sprague dawley type rats; were divided into 4 groups as control, fructose, quercetin, fructose+quercetin (n=6). During the 10-week experimental period, quercetin was administered at a daily dose of 15 mg/kg via oral gavage, and fructose was administered at 20% in drinking water. Blood pressures and weights of all groups were measured and recorded. At the end of the 10th week, the animals were sacrificed under anesthesia, blood samples were taken, serum glucose, lipid profile and insulin levels were measured. RESULTS: In our study, MetS criteria were successfully established with fructose. Positive effects were observed when quercetin was given alone and to groups with fructose, and it was revealed that it improved the MetS criteria. The results of our study suggest that 15 mg/kg quercetin administration for 10 weeks will be beneficial in lipid and carbohydrate metabolism in the fructose-mediated MetS model. CONCLUSIONS: We believe that studies of quercetin administration at different times and doses will be useful in revealing the mechanisms in the formation of MetS components.
**Keywords:** Metabolic Syndrome, Fructose, Quercetin, Insulin Resistance

**P-065**
**DRACAENA CINNABARI BALF. F. WITH DIFFERENT SOLVENTS: PHENOLIC, ORGANIC ACID AND TOCOPHEROL SUBSTANCES DETERMINED IN MINIMUM AMOUNTS IN RESIN EXTRACT**

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BACKGROUND AND AIM: Dracaena cinnabari Balf.f. it was aimed to determine the types and amounts of phenolic, organic acid and tocopherol substance compositions, which were determined in minimum amounts of extracts of different solvents.
METHODS: The minimum amounts of phenolic and organic acid substances were determined with the HPLC device of SHİMADZU (Japan-Tokyo) brand of the substances included in the extractions we obtained with different solvents at Süleyman Demirel University YETEM-Applied Basic Sciences and Technologies Research Unit.
RESULTS: In this research, Dracaena cinnabari Balf. f. the first three of those determined in the minimum amounts of phenolic substance in the extracts of the resin obtained in different solvents; Syringe acid14(mg/g) in chloroform extract, o-Coumaric acid 24(mg/g) ethanol extract, o-Coumaric acid 25(mg/g) vinegar extract ranked from least to most.
The first three in organic acid; It was determined that ascorbic acid was 0.01 (mg/g) in methanol extract, Tartaric acid was 0.02 (mg/g) in methanol extract and 0.03 (mg/g) in ethanol extract.
Tocopherols are; Delta 0.01(µ/g), distilled water, beta 0.02(µ/g), chloroform, gamma 0.02(µ/g), vinegar, alpha 0.02(µ/g), methanol, beta 0.03(µ/g), They were found in distilled water extract.
CONCLUSIONS: In the study, Dracaena cinnabari Balf. f. of the phenolics in the structure of the resin, the lowest amount of syringe acid is in 14 (mg/g) chloroform extract, organic acid, ascorbic acid is in 0.01 (µ/g) methanol extract, and Tocopherol is; Delta 0.01(µ/g) was determined in distilled water extract. Tartaric acid was found to be higher in the same solvent than Ascorbic acid in methanol solvent, which is one of the organic acids. The amount of tartaric acid varies in different solvents. While tocopherols delta and beta carotenoids were determined in different amounts in the same solvent, distilled water solvent, it was observed that beta carotenoid amounts were different in distilled water chloroform solvent, which is different solvents.
This shows us that the solvents of each substance are different, and that even the same solvent dissolves different substances in different amounts. When it is desired to use trace amounts of these and similar substances in all medical researches, these analyzes will speed up the studies.
**Keywords:** {Dracaena cinnabari} Balf. f., Phenolic substance, Organic asid, Carotenoid, Extraction, Analysis.

**P-066**
**THE EFFECT OF VITAMINE D DEFICIENCY ON THE RELEASE OF GHRELINE AND LEPTIN HORMONE IN RABBITS**

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BACKGROUND AND AIM: Vitamin D differently from other vitamins is synthesized in the body and is therefore regarded as a hormone. A body that has vitamin D up to its merit sends a leptin hormone that gives the brain a feeling of satiety. In this context, low vitamin D means less leptin and more hunger. Fat cells are endocrinologically active cells and contain vitamin D receptor. Thus, fat tissue is among the target tissues for active vitamin D. The aim of this study is to investigate the effect of leptin and ghrelin hormone levels in rabbits with deficient D vitamins. METHODS: The study was carried out on 16 New Zealand rabbits. Following the 15-day adaptation period, feed and drinking water were given as ad libitum to the groups formed as 8 rabbits each. Group I rabbits were fed with normal pellet feed and group II rabbits for 24 weeks with D vitamin deficient. RESULTS: Serum leptin, ghrelin and vitamin D levels were determined by ELISA with commercial kits. Serum D vitamine level was significantly lower ($p < 0.005$) in the group lacking vitamin D than the other group. Serum ghrelin and leptin levels were significantly lower ($p < 0.05$) in the D group than in the other group. CONCLUSIONS: In rabbits, it was determined that D vitamins should be fed for at least 6 months with feed added to form vitamin D deficiency, rabbit D vitamine deficiency lowered levels of lipid metabolism and energy balance, leptin and ghrelin hormones related to nutrient intake appetite mechanisms.
**Keywords:** Vitamine D deficiency, Ghrelin, Leptin, Rabbit

**P-067**
**THE EFFECT OF WET CUPPING THERAPY ON THE KYNURENINE PATHWAY**

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BACKGROUND AND AIM: Wet cupping theraphy (WCT) is commonly used in different conditions such as hypertension, diabetes, inflammatory diseases. The mechanism of action of wet cupping therapy is not yet clear, however several studies have demonstrated that it has a role in limiting oxidative stress and inflammation. The tryptophan kynurenine pathway plays a key role in inflammation and immune response. The aim of the study is to contribute to the elucidation of the mechanism of action of WCT in inflammation by measuring tryptophan and kynurenine levels in wet cupping and venous blood samples taken concurrently from subjects who underwent WCT. METHODS: WCT was implemented to 50 volunteer women. Venous blood and wet cupping blood samples were taken concurrently. Venous blood and wet cupping blood samples tryptophan and kynurenine levels were measured using a validated tandem mass spectrometric method through a pretreatment procedure requiring protein precipitation with acetonitrile. RESULTS: Serum tryptophan [4658 (857-12100) ng/ml vs 2955 (517-5160) ng/ml, $p=0.003$], kynurenine levels [376.5 (61-850) ng/ml vs 235.8 (57-695) ng/ml, $p<0.001$] and Kynurenine/Tryptophan [0.0891 (0.04-0.41) vs 0.0752 (0.02-0.17), $p=0.041$] ratio were statistically significantly higher in wet cupping samples compared to venous blood. The inter-assay CV% values for all analytes were less than 11.2% of the tandem mass spectrometric method used in the quantitation of analytes. Recovery% values ranged from 93.1% to 107.8% for all analytes, while the matrix effect values were less than 10%. CONCLUSIONS: Our findings suggest that WCT contributes to the reduction of the Kynurenine/Tryptophan ratios. Therefore, our study supports the finding that WCT may be beneficial especially in the prevention of inflammatory chronic diseases.
**Keywords:** Wet cupping theraphy, inflammatory diseases, kynurenine, tryptophan.

**P-068**
**DETERMINATION OF SERUM FATTY ACIDS BY GAS CHROMATOGRAPHY MASS SPECTROMETRY**

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BACKGROUND AND AIM: Fatty acids (FA) are amphipathic compounds consisting of a non-polar hydrocarbon chain and polar carboxylic acid group. It is known that FA play an important role in cell homeostasis, affect the immune system, and have antimicrobial and anticancer activity. The aim of this study is to develop a simple, fast and accurate gas chromatography-mass spectrometry (GC-MS) method for the detection and quantification of FA. METHODS: 100 µl of internal standard (Methyl heptadecanoate), 50 µl of serum and 1 ml of freshly prepared 3 N methanolic HCl were added to a 4 ml glass tube. It was incubated at 90°C for 4 hours to achieve transmethylation. After the tubes were cooled to room temperature, 2 ml of hexane was added and vortexed for 10 seconds. The supernatant was transferred to a glass tube and evaporated under nitrogen gas at room temperature. The residues in the tubes were dissolved with 100 µl of hexane and injected into the GC-MS system. RESULTS: Developed method C11:0, C13:0, C15:0, C16:1, C17:0, C17:1, C18:1 ω9t, C18:2 ω6t, C18:2 ω6c, C21:0, C20:2, C20:3 ω6, C22:1 ω9, C20:3 ω3, C20:4 ω6, C23:0, C22:2, C24:1, C20:5 ω3, C20:6 ω3, C10:0, C12:0, C14:0, C18:0, C18:1 ω9c, C20:0, C22:0, C24:0, C16:0 It was linear in the range of 6.25 to 300 µg/ml for Total analysis time was approximately 65 minutes for one sample. CONCLUSIONS: As a result of our study, a multiplex analysis method was developed that allows the analysis of serum levels of FA in a common method with the same pretreatment steps.
**Keywords:** Fatty acids, gas chromatography, mass spectrometry, bioanalysis

**P-069**
**DETERMINING THE SHELF LIFE OF A NEW DESIGNED UREA BIOSENSOR**

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BACKGROUND AND AIM: Urea is a harmful substance to the human body, which is formed as a result of the use and breakdown of protein foods. This substance is discharged by the kidneys and excreted in the urine. If the kidneys cannot excrete this substance enough, it starts to accumulate in the blood. Its elevation has a toxic effect on the body, and when it is too high, it is impossible to live. For these reasons, urea determination is of great medical importance. METHODS: In this study, we aimed to design a new amperometric biosensor for urea determination. For the determination of urea, the urease enzyme was immobilized on the graphite electrode by using BSA/Gelatin and cross-linking with glutaraldehyde. Measurements were carried out at 0.2 V. Optimization studies of the designed biosensor were carried out to determine the bioactive layer components and shelf life. RESULTS: From bioactive layer optimization studies; Gelatin, bovine serum albumin content and optimal glutaraldehyde percentage were determined as 0.45 g, 0.030 g and 2.5% for the graphite/BSA-Gelatin/Urease/glutaraldehyde modified biosensor. When we look at the shelf life studies, it was found that the results were preserved at the rate of 82.5% at the end of the 40th day. CONCLUSIONS: When we look at the shelf life studies, it was found that the results were preserved at the rate of 82.5% at the end of the 40th day.
**Keywords:** Biosensor, Urea, Urease

**P-070**
**EXAMPLE OF MEASUREMENT UNCERTAINTY IN CALCULATED TESTS: CALCULATED PLASMA OSMOLALITY**

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BACKGROUND AND AIM: Plasma osmolality can be measured as well as calculated using glucose, urea and sodium test results. Our aim in this study is to determine the measurement uncertainty of calculated osmolality in our own laboratory. METHODS: Measurement uncertainties of sodium, urea and glucose performed on Roche Cobas 8000 autoanalyzer were calculated. Then, using these data, the measurement uncertainty for 'Calculated Osmolality' was calculated. Measurement uncertainty calculations were made according to the ISO/TS 20914 measurement uncertainty guideline using the formula (u(y)=urw+ucal)* (Urw: intermediate

precision conditions of measurement, Ucal: calibrator uncertainty).Two levels of internal quality control data studied between 15.02.2021 and 06.09.2021 were used for the Urw calculation.The uncertainty calculation for both levels was done separately.Within the scope of ISO/TS 20914 guideline, the SD of internal quality control data was accepted as uRw.Ucal data was obtained from Roche Diagnostics. The expanded uncertainty of measurement [U(y)] was obtained by multiplying the result u(y) with the coverage factor (k) (k=2). The percent relative uncertainty of measurement (%Urel) of the measured parameters was calculated with the formula (U(y)/internal quality control mean)*100. Osmolality percent relative uncertainty of measurement (%Urel) was calculated with the formula (U(y)/osmolality result)*100. U(calculated osmolality)= √(2²xu²(sodium)+u²(urea)+u²(glucose)) was calculated. The level of uncertainty to be used in the parameters was decided by looking at the midpoint of the mean values of the controls. RESULTS: The low-level combined standard uncertainty for sodium, urea, and glucose were 1.57, 0.05, 0.14 and the high-level combined standard uncertainty of these measurements were 1.58, 0.35, and 0.30 respectively. For a sample with Na:135 mmol/L, Urea:9 mmol/L, Glucose: 7 mmol/L, plasma osmolality=295 mOsmol/L. Level 2 control uncertainty for 135 mmol/L sodium, level 2 control uncertainty for 9 mmol/L urea, and level 1 control uncertainty for 7 mmol/L glucose were taken into account in the calculation of uncertainty for the calculated osmolality. The uncertainty of the calculated osmolality test accordingly u(osmolality)=3.17; U(osmolality)=6.35; It was calculated as %Urel(osmolality)= (U(osmolality)/295) x100=2.15.
CONCLUSIONS: The calculation of measurement uncertainties by clinical biochemistry laboratories improves the clinician's contribution to patient management. At this point, it is important to calculate the measurement uncertainty of not only the measured parameters but also the calculated parameters.
**Keywords:** calculated, measurement uncertainty, osmolality

**P-071**
**PRE-ANALYTICAL STABILITY FOR FREQUENTLY RE-RUN ROUTINE IMMUNOASSAY TESTS = A SMALL-SCALE LABORATORY EXPERIENCE**

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BACKGROUND AND AIM: Sample handling prior to analysis has the potential to dramatically affect the results of a measurement.Thus,it has utmost importance to investigate if different storage conditions contribute to systematic errors in order to provide the clinicians with adequate sample collection and transport instructions. On the top of that, pre-analytical variation can occur during collection,processing and storage of the blood and could result in non-biological variation of measurement levels.Herein, my aim was to assess the storage and freeze/thaw(f/t) stability of free triiodothyronine(FT3), thyroxine (FT4) and thyroid stimulating hormone (TSH). METHODS: Firstly I have specified immunoassay tests,which were pended or processed for re-run mostly in my laboratory,respectively(TSH, FT4, FT3).It were repeated the following steps for three independent samples each analyte with different concentrations of the measurand(low, medium,high(L,M,H)).10 mL serum pool was prepared for each analyte(L,M,H).The concentrations of each serum pool at t=0 point were measured.Samples are divided into nineteen aliquots with equal sample volume(500 µl).Aliquotes experimentally exposed to delayed storage:0, 1, 2, 4, 24, 72, or 168 h at 4 °C or room temperature(RT), or 1- 4 months at −20 °C; or up to 7 f/t cycles,before final storage at −20°C. All aliquots have been thawed for a given sample simultaneously and analyzed them in duplicates in the same run.Raw data of aliquots(replicates of observed concentrations) were recorded Excel File (Microsoft Excel for Mac).Thanks to the designed excel, file calculates the mean value,SD and coefficient of variation(%CV) for both the observed concentration and normalized concentration.The SD for the storage conditions and the freeze/thaw aliquots must be within the acceptance criteria for the precision defined in the fit-for-purpose. RESULTS: For f/t stability evaluation, the highest change for TSH was observed at the M levels introduced into the f/t cycle 5 times (Mean Normalized Concentration 81.4%, SD Normalized Concentration 6.15, CV Normalized Concentration 7.55%). For storage stability evaluation, the highest change was observed at L level of FT3 kept at 72H RT (Mean Normalized Concentration % 87.3, SD Normalized Concentration 2.86, %CV Normalized Concentration 3.28). CONCLUSIONS: In conclusion, levels of thyroid function tests appeared resistant to common experimental storage and freeze/thaw conditions.
**Keywords:** Stability, Freeze, Thaw, Thyroid function tests

**P-073**
**OPINIONS OF HIGH SCHOOL STUDENTS ON VACCINE REJECTION**

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BACKGROUND AND AIM: By vaccination, individual immunity is provided and the person is protected from the disease, while at the same time social immunity is provided. This study aims to determine the views of high school students on vaccine rejection. METHODS: In the study, 130 high school students were reached.In data collection 12-question survey form developed based on literature knowledge was applied. RESULTS: 60% of the participants in the study are girls and 40% are boys. Average age is 15.28. 75% of the participants think that if the vaccine rejection becomes widespread in the society, the public health will be adversely affected, who states that reading-hearing negative things about vaccines and negative statements about vaccines by people who are accepted as role-models in the society may cause this situation. CONCLUSIONS: High school students think that with the increase in vaccine rejection, epidemics in the society will increase, and they stated that scientific research should be done to prevent this. With the increase of students' knowledge and awareness about vaccine rejection, it will be possible to raise generations sensitive to social immunity.
**Keywords:** Vaccine Rejection, Epidemic, Immunity

**P-074**
**FALSE ELEVATION OF BETA-HUMAN CHORIONIC GONADOTROPIN IN IMMUNOGLOBIN A DEFICIENCY**

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BACKGROUND AND AIM: Human chorionic gonadotropin hormone (β-hCG) is essential in the diagnosis and follow-up of pregnancy, molar pregnancy, and various malignancies. It is known that the false elevation of this parameter can cause false cancer diagnosis in both men and women and unnecessary chemotherapy. One of the important causes of false β-hCG elevation is IgA deficiency in which heterophile antibodies develop. The aim of this study is to retrospectively investigate whether false β-hCG elevation is observed in patients with Ig-A deficiency in Ege University Medical Faculty (EUTF) Hospital. METHODS: β-hCG levels of 4612 patients with IgA deficiency (<0.27 g/L) who applied to EUTF Hospital between 2019-2021 were screened retrospectively. IgA levels were studied by nephelometric method (SIEMENS BN2), and β-hCG levels were measured by sandwich electrochemiluminescence method (COBAS6000). RESULTS: β-hCG levels were also requested by the clinicians and measured in 22 of 4612 individuals with IgA deficiency. In 6 of them, an increase in β-hCG (> 0.1 U/L) was detected, but in 5 of these cases the situation could not be explained clinically and further investigation was not conducted. In the remaining one patient, recurrent β-hCG measurements continued to be elevated and bilateral salpingooopherectomy was applied to the patient. CONCLUSIONS: IgA Deficiency is the most common cause of primary-immune deficiency in Europe(1/223-1/1000). In these patients heterophile-antibodies are formed for unexplained reasons and may interfere with electrochemiluminescence, most commonly with the immunometric sandwich method, and cause false elevated β-hCG results. With results of the retrospective scan in patients with IgA deficiency and elevated β-hCG, it is questionable if the elevation of β-hCG may be due to interference, since no further studies have been conducted for the presence of heterophile antibodies in the blood or the determination of β-hCG in the urine. Since heterophile antibodies do not pass into the urine, a simple parallel measurement of β-hCG in the urine in every suspected case of this type will prevent misdiagnosis, treatment and unnecessary medical interventions.
**Keywords:** Ig A deficiency, beta human chorionic gonadotropin, heterophile antibodies, interference

# SATELLITE SYMPOSIUM ABSTRACTS

## ROCHE SATELLITE SYMPOSIUM
**High-Sensitivity Troponin Assays in Clinical Diagnostics, Under the Light of Current Scientific Guidelines**

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Chest pain is one of the most common reasons for an emergency room visit and it can be caused by a number of life-threatening conditions, including acute coronary syndromes (ACS).
Unstable angina, acute non-ST elevation myocardial infarction (NSTEMI), and acute ST elevation myocardial infarction (STEMI) are the three presentations of ACS. The first step in the management of patients with ACS is prompt recognition.
Symptoms, cardiac biomarkers and 12-lead ECG should be evaluated together in diagnosis, risk stratification, and treatment of patients with suspected ACS.
Cardiac troponins are widely used as one of the most important components of the ACS diagnosis. The troponin complex regulates the contraction of striated muscles and consists of three subunits (troponin C, troponin T, and troponin I). Their measurement can be performed using sensitive or high sensitivity tests. High sensitivity troponin assays should be preferred, when available. They have the ability to rapidly rule in or rule out ACS with improved sensitivity, and they are increasingly being used
A negative high-sensitive cardiac troponin T (hs-cTnT) test has a high negative predictive value, and may thus serve as an exclusionary test early in the diagnostic process. On the other hand, serial testing, as well as clinical context, are likely to become increasingly important for the interpretation of hs-cTnT assay results. Please note, many cardiac pathologies other than ACS also result in cardiomyocyte injury and, therefore, cardiac troponin elevations. Thus, it is important to understand how to interpret hscTn results.

## BECTON DICKINSON SATELLITE SYMPOSIUM
**Blood Sampling Approach from Intravenous Catheters and Children with International Guidelines and Literature Findings**

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Vascular access devices (VAD) are used to gain access to a patient's bloodstream through the veins to deliver a wide range of treatments, including vascular access for infusion therapy, parenteral nutrition, medication delivery, and blood draws. Although nurses may collect blood samples from peripheral intravenous catheters to reduce the number of needle sticks that patients must endure, this practice is associated with greater hemolysis. Some clinical exceptions include patients receiving thrombolytic agents or patients at increased risk of bleeding or possibly in an emergency situation with limited vascular access. Standardization of practice and education of staff will help minimize the equipment and technical factors associated with greater hemolysis. However, strategies must be developed to overcome barriers to changing this practice, including personal preference and feasibility. Therefore, we will focus on real-world evidence and some international guidelines recommendations to mitigate the risk of hemolysis. We will focus on WHO guidelines in the same session, especially the chapter discussing pediatric and neonatal blood sampling. Anyone taking blood from children and neonates must be well trained and practiced in venepuncture techniques. Additional focus is to discuss an effective way to apprehensive child into a cooperative patient.

## MINDRAY SATELLITE SYMPOSIUM
**The Great Value of Clinical Laboratories in the Pandemic Process**

Sergio Bernardini
Tor Vergata University of Rome, Italy

Laboratory Medicine has been showing its great Value during Covid-19 pandemic in the whole care process: diagnosis, screening, follow up and outcome of the disease. The diagnostic tools to date are able to dose viral RNA, and antibodies against viral proteins or viral proteins themselves.
Even if the conventional RT-PCR has been the most widely used method, the greatest innovation in molecular diagnosis was reported by the so called CRISPR Community.
The first serological tests to be introduced were rapid serological tests with direct reading (first generation) or with fluorescence reading (2nd generation) and microfluidic with fluorescent reading (3rd generation).
Then conventional CLIA method have been introduced with better sensitivity and more recently a new kind of serological assay has been proposed able to detect anti SARS-Cov-2 serum antibodies throughout a competitive streptoavidin/biotin assay which utilize RBD as coated antigen and ACE-2 labelled with biotin as competitor molecule for serum antibodies.
Until few months ago the harmonization between many methods produced by many manufacturers was impossible. Recently the WHO produced an international standard (pool of sera-total antibodies) able to permit a sort of harmonization.
To date NGS return to be widely utilized in the effort to intercept new variants.
Finally, pathophysiology and natural course of Post-acute Sequelae of COVID-19 (PASC) also called "Long Covid"is unclear, meriting further studies. Also in this almost still unknown field, Clinical Laboratory could contribute in diagnosis and monitoring.

## ABBOTT SATELLITE SYMPOSIUM
**Clinical Decision Support System and Applications in the Laboratory**

Umar Ansari
Abbott, Istanbul, Turkey

Umar Ansari has 16 years of experience in healthcare and informatics. In 2019, he top off his career by being deemed worthy of the "Top 100 Healthcare Leaders" award at the International Healthcare Advances (IFAH) forum. He continues to work on innovative solutions to overcome the challenges arising from factors such as digitalization, clinical decision support, telehealth and financial constraints of institutions.
We'll hear from him on how clinical and operational insights will impact health transformation and increase outcomes.

## SCIEX SATELLITE SYMPOSIUM
**New Mass Spectrometry Workflows and Fragmentation Pathways for The In-Depth Analysis of Complex Samples**

Volker Kruft
SCIEX, Canada

Biological samples pose a number of challenges: they tend to contain a large number of analytes in widely varying concentrations, and the size of the sample sets to be analyzed can easily reach into the thousands.
Recent developments in the performance of high resolution qTOF instruments address these problems, the systems being very fast while maintaining high resolution. Acquisition rates exceeding 100 Hz in combination with data-independent acquisition (DIA) routines allow the complete mapping in MS and MS/MS of thousands of analytes.
At the same time, standard collision induced fragmentation (CID) in the mass spectrometer has long been recognized as not being sufficient to fully characterize all analytes; either not detecting critical attributes like the position of peptide modifications or not being strong enough to induce fragmentation, as is the case with many singly-charged peptides and isomeric metabolites. The recently introduced, tunable electron-activated fragmentation (EAD) addresses these needs. At the same time, the speed of EAD acquisition is in the range of 30 milliseconds, so does not slow down current high-speed mass spectrometry workflows.
Examples and results of all workflows and acquisition options will be presented.

## BINDING SITE SATELLITE SYMPOSIUM
**Monoclonal Gammopathies, Diagnosis and Monitoring**

Mohannad Yacoub
Medical Science Liaison, International Sales, Birmingham, United Kingdom

Monoclonal gammopathies are a group of disorders characterized by the proliferation of a single clone of plasma cells. These plasma cells produce an immunologically homogeneous immunoglobulin, or parts thereof, also known as an M (for monoclonal) protein. We will be in a journey to discuss the Laboratory Methods for Diagnosis and monitoring of Monoclonal Gammopathies, focusing on clinical significance of FLC, HLC and MM panel and the usefulness to detect the remission and MRD's.

## SIEMENS PRESENTATION
**Our Response to the COVID-19 Pandemic - Siemens Healthineers**

Fatih Kucukali
Siemens Healthineers, Istanbul, Turkey

The benefit of laboratory results and technology while determining the prognosis of the disease in Covid19 infection? Is it possible to increase the impact of the laboratory in clinical evaluation? By combining thousands of patient data with critical tests, we, as Siemens Healthineers, are shaping the future in an algorithm that works with machine learning and artificial intelligence.