KARABAKH

II. INTERNATIONAL CONGRESS OF APPLIED SCIENCES AZERBAIJAN NATIONAL ACADEMY OF SCIENCES

8-10 November 2021
Azerbaijan

PROCEEDING BOOK

VOLUME-I

Editör
Akademik İrade HÜSEYNOVA

978-625-8007-80-0

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CONGRESS ID

CONGRESS TITLE

II. INTERNATIONAL KARABAKH CONGRESS OF APPLIED SCIENCES

DATE and PLACE

8-10 November 2021/Azerbaijan

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Azerbaycan Milli İlimler Akademiyası - AMEA
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NUMBER of ACCEPTED PAPERS – 201
NUMBER of REJECTED PAPERS – 62

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AZERBAIJAN – INDIA – PORTUGAL – POLAND – ALGERIA – IRAN – TABRIZ – UKRAINE – PAKISTAN – LIBYA – BULGARIA – MOROCCO – MALAYSIA – RUSSIA
(176)
TURKEY (25)

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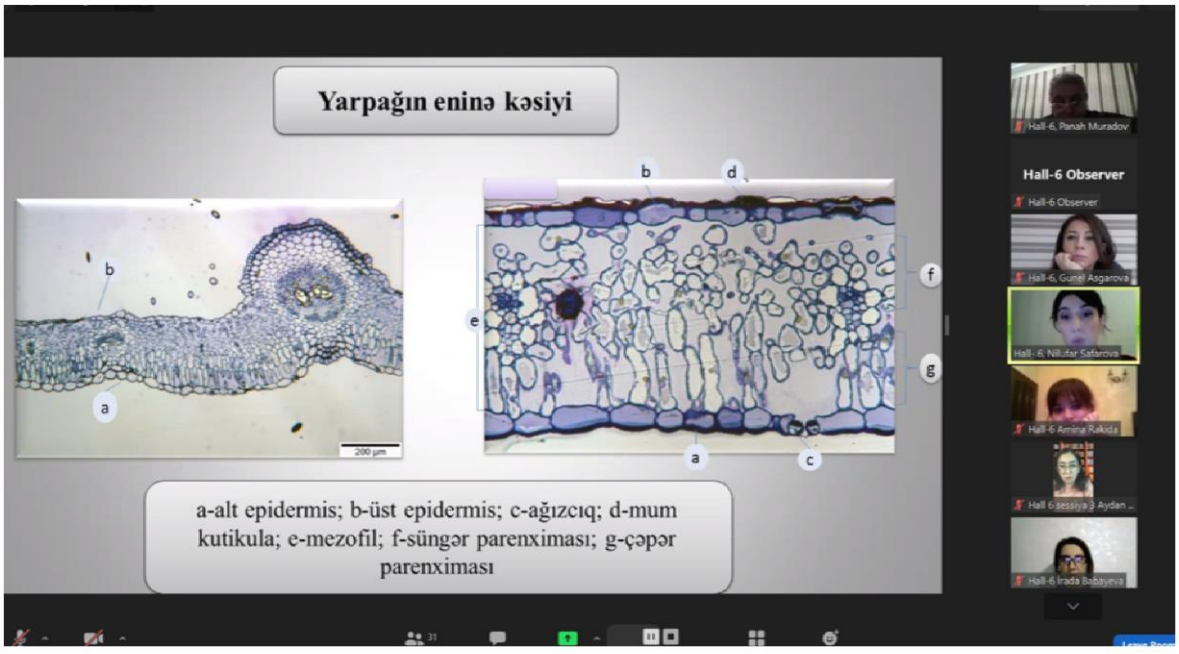
PHOTO GALLERY



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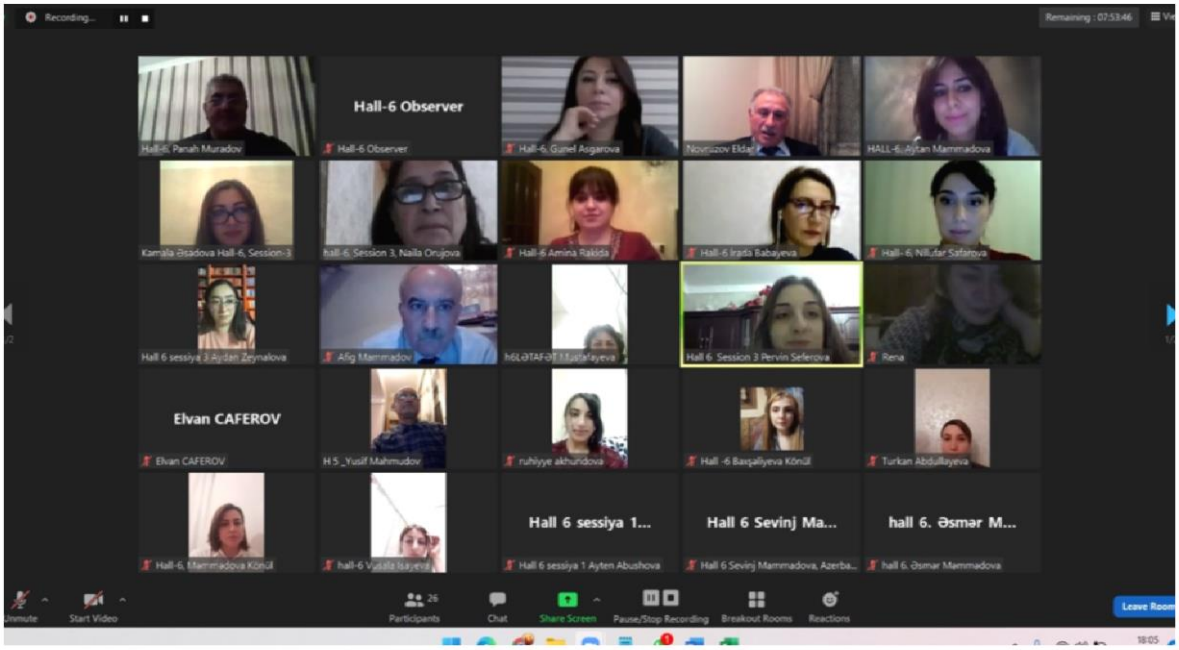

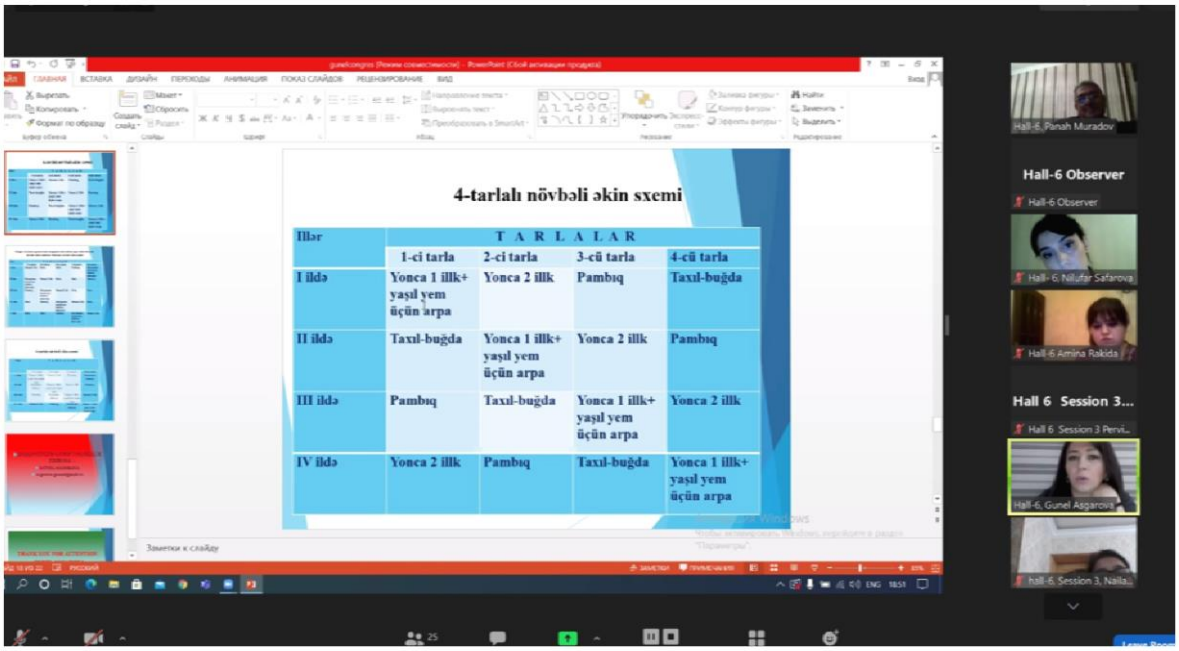

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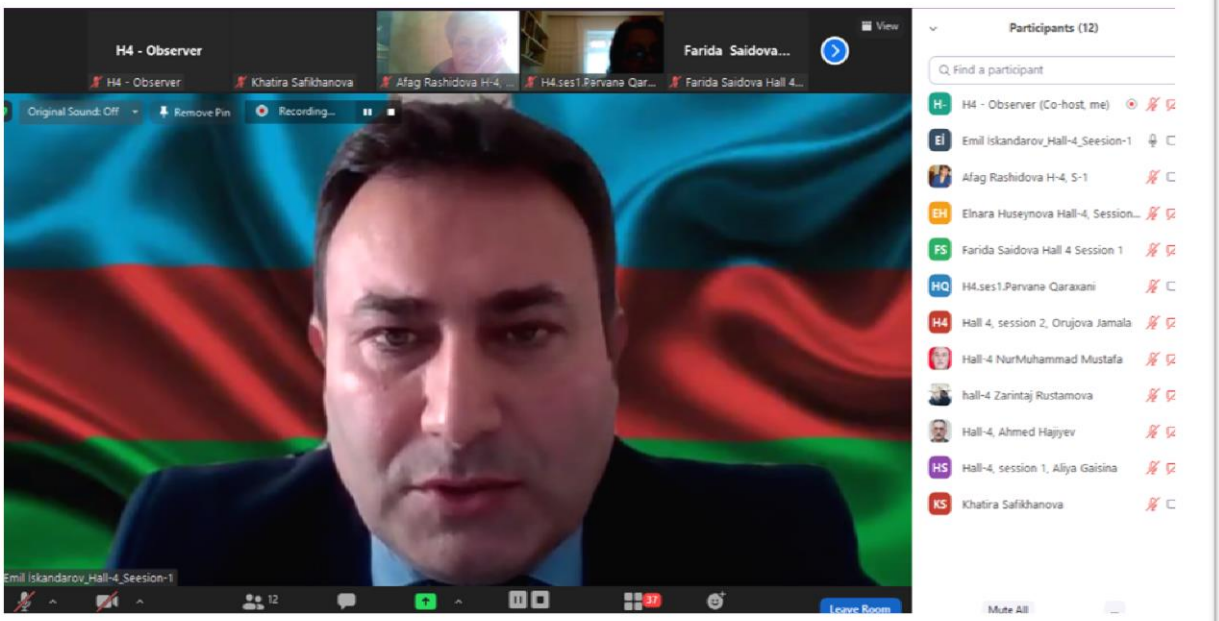

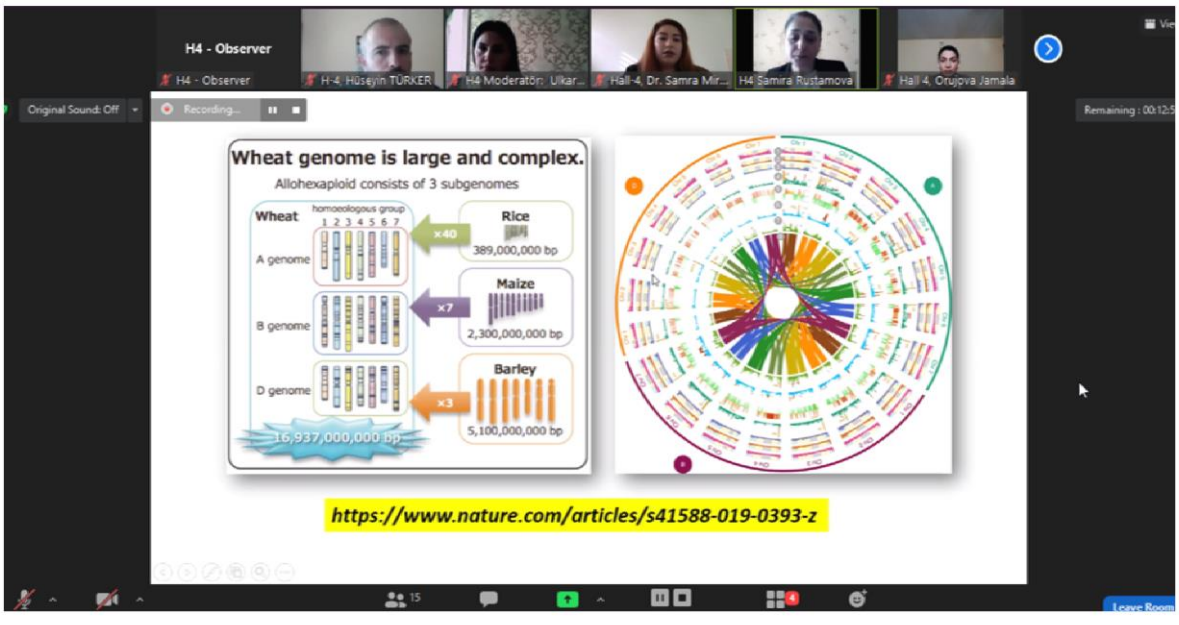

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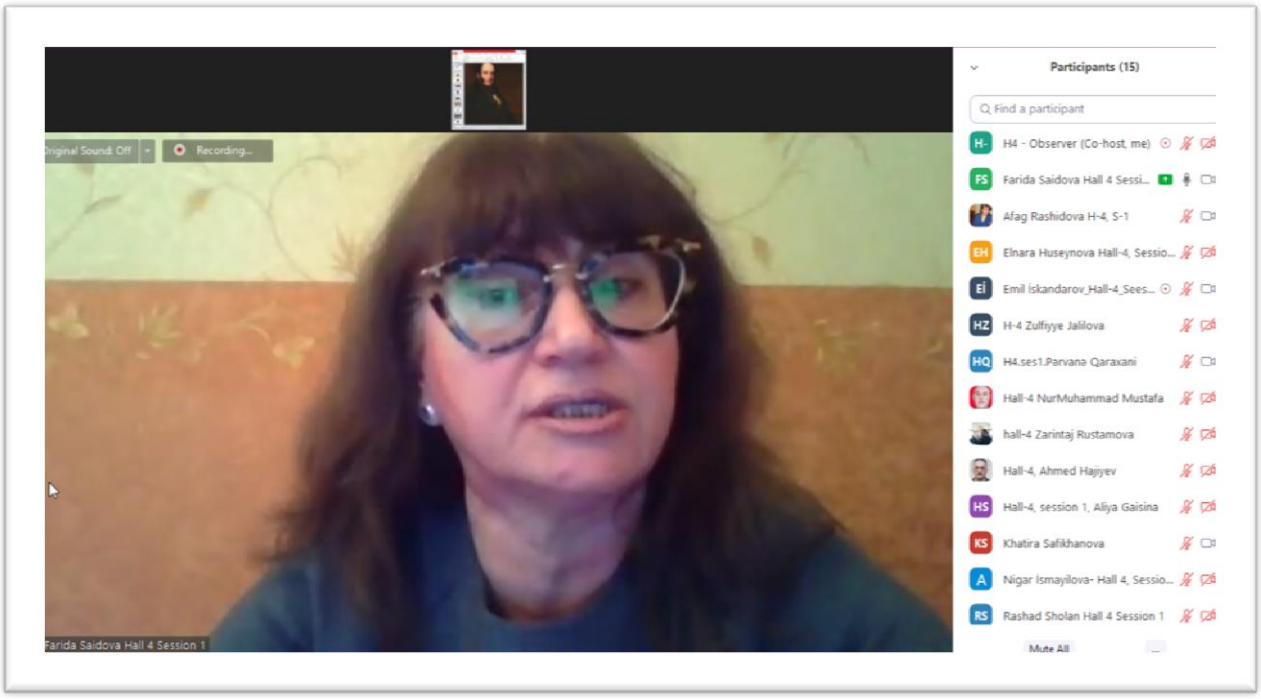

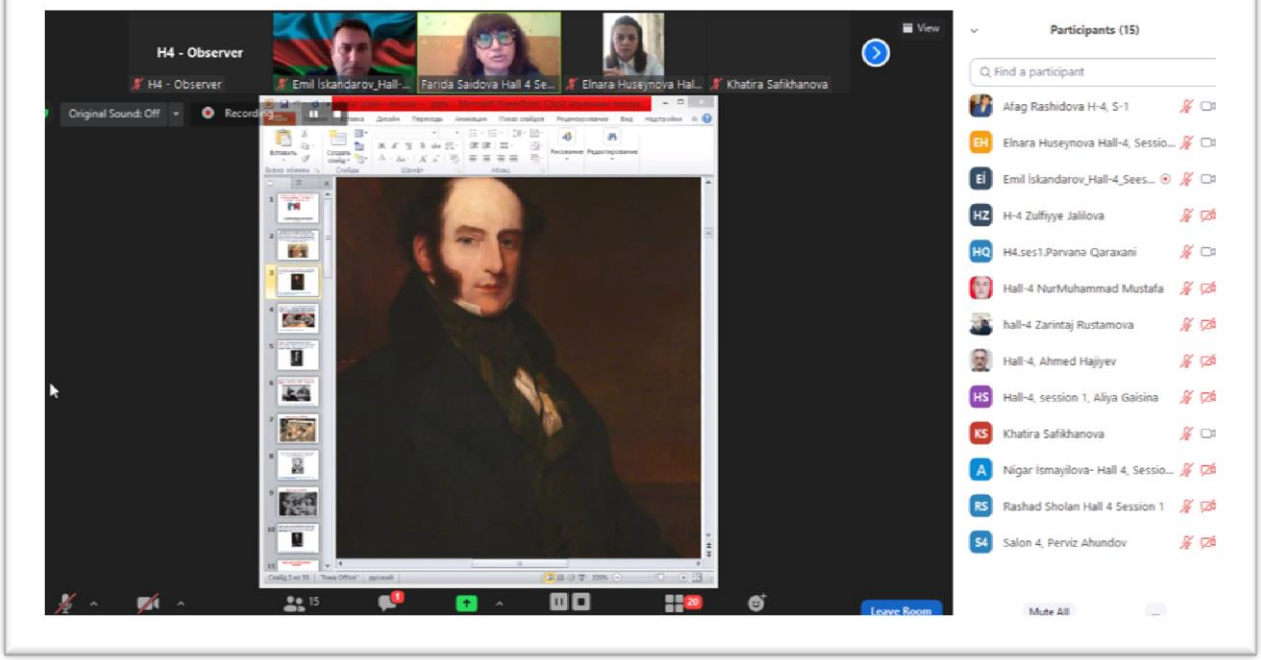

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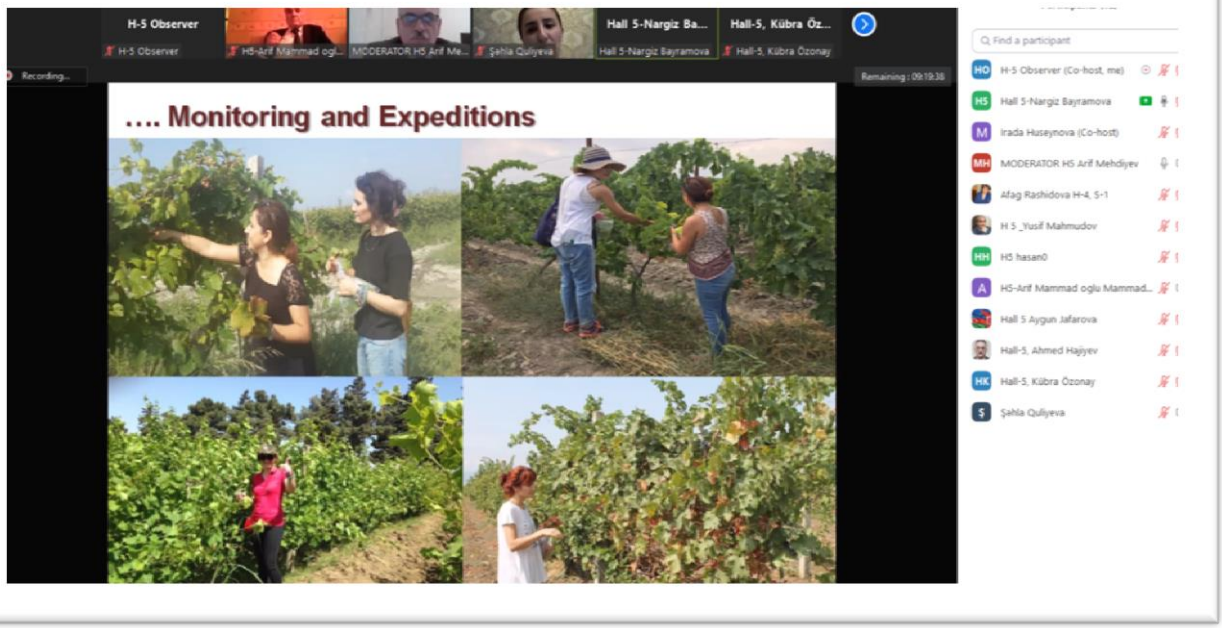

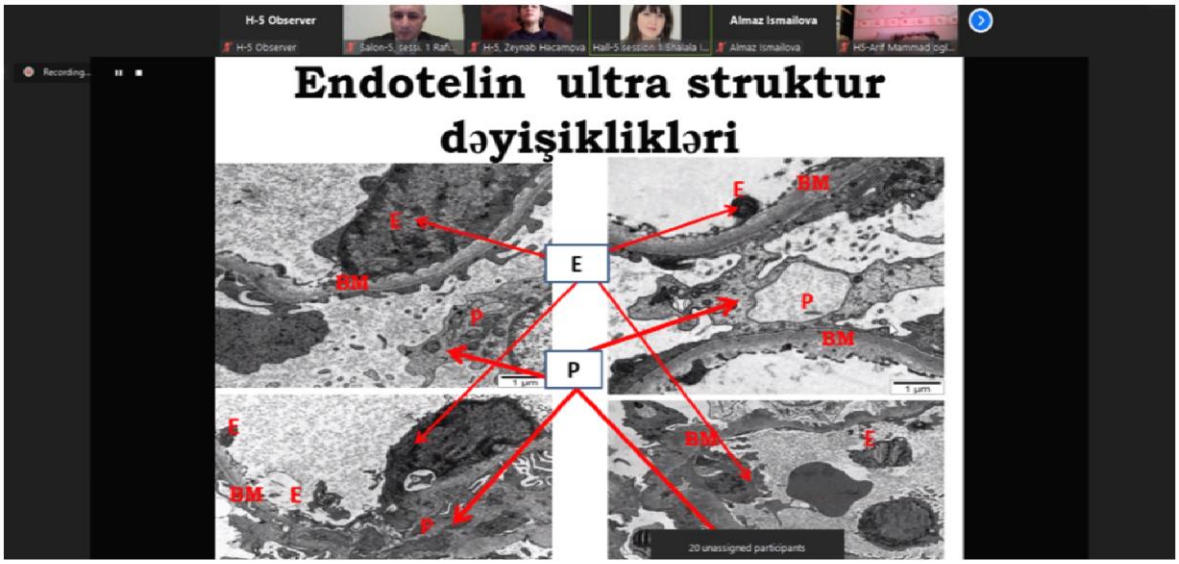

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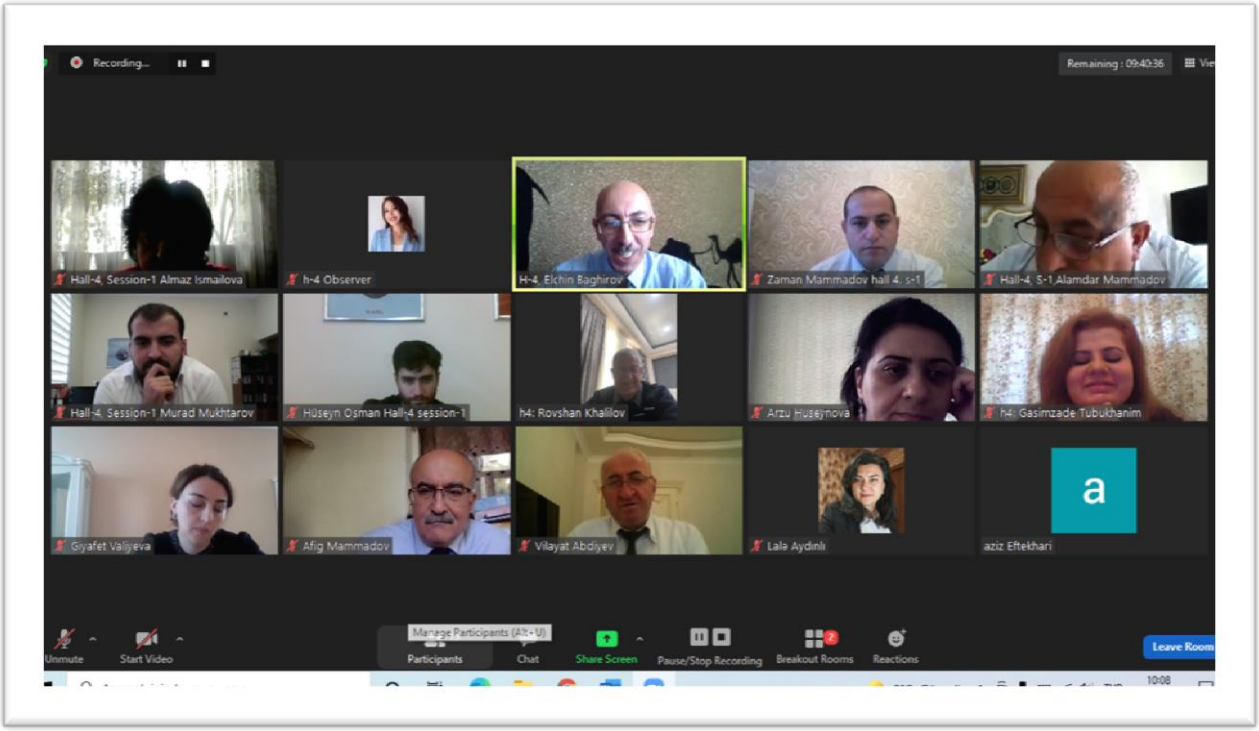

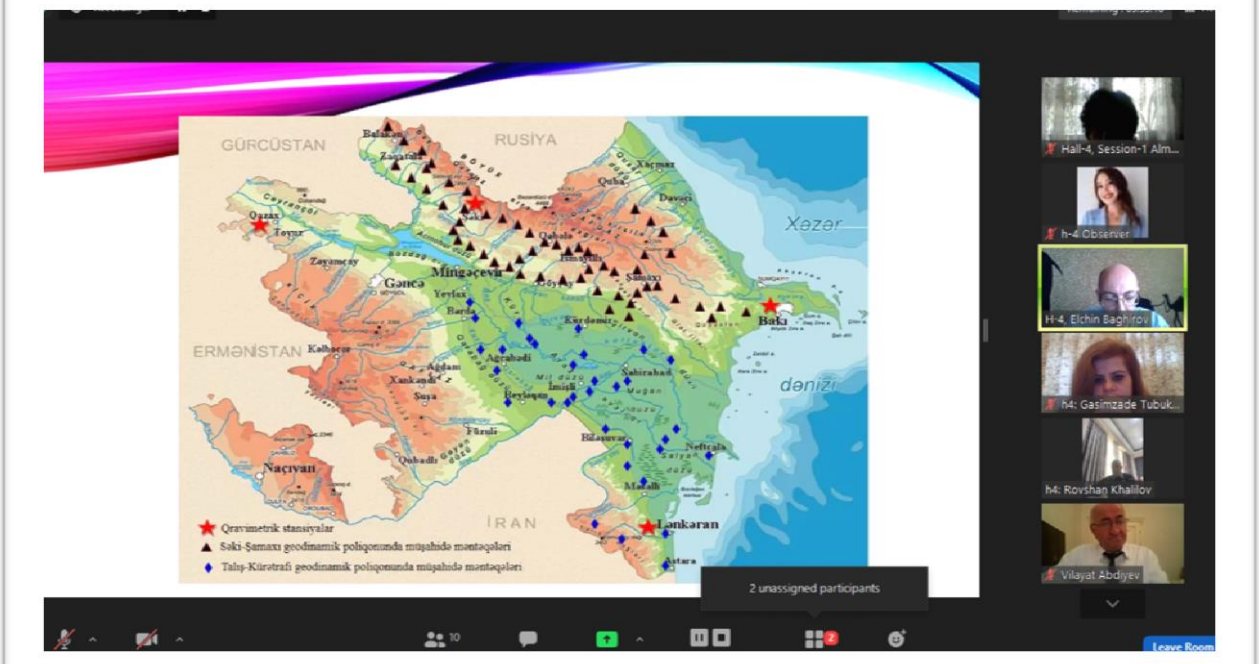

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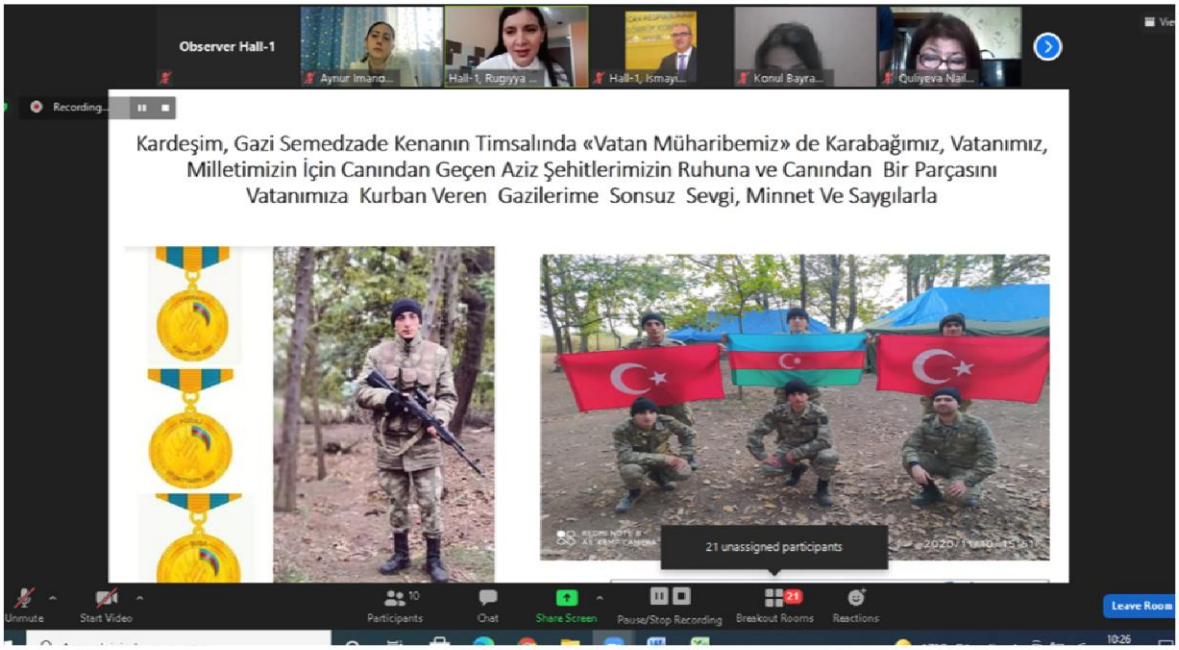

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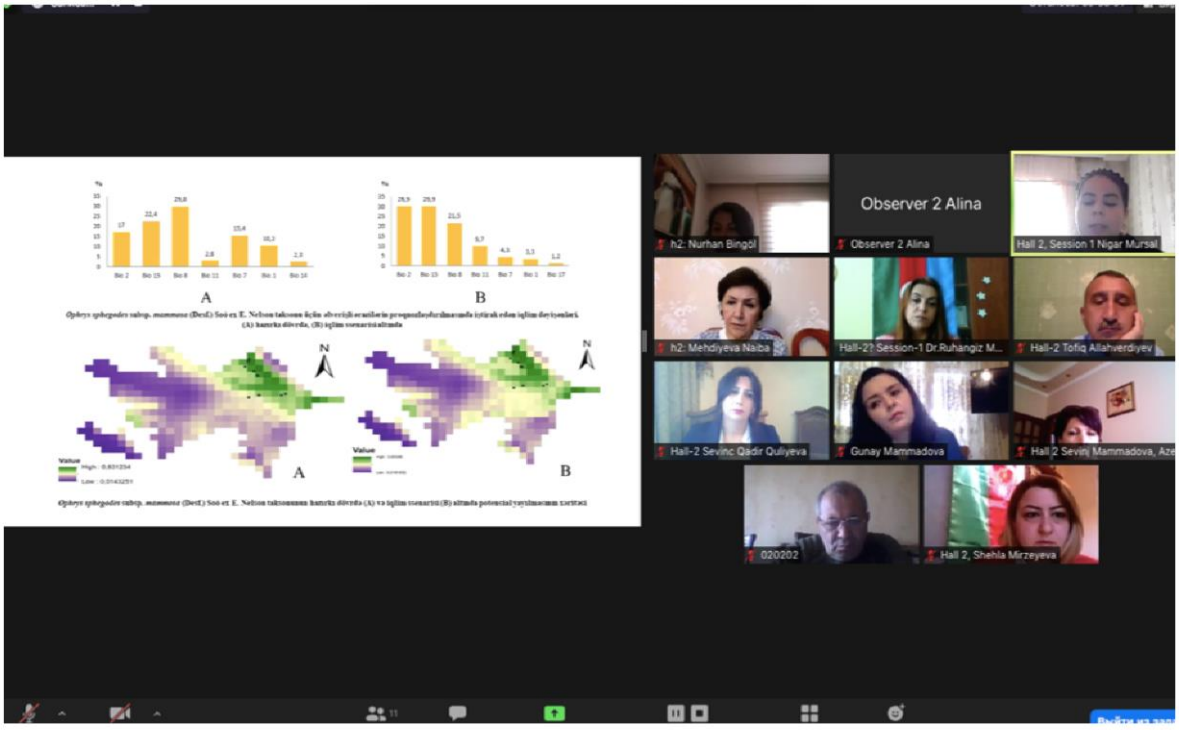

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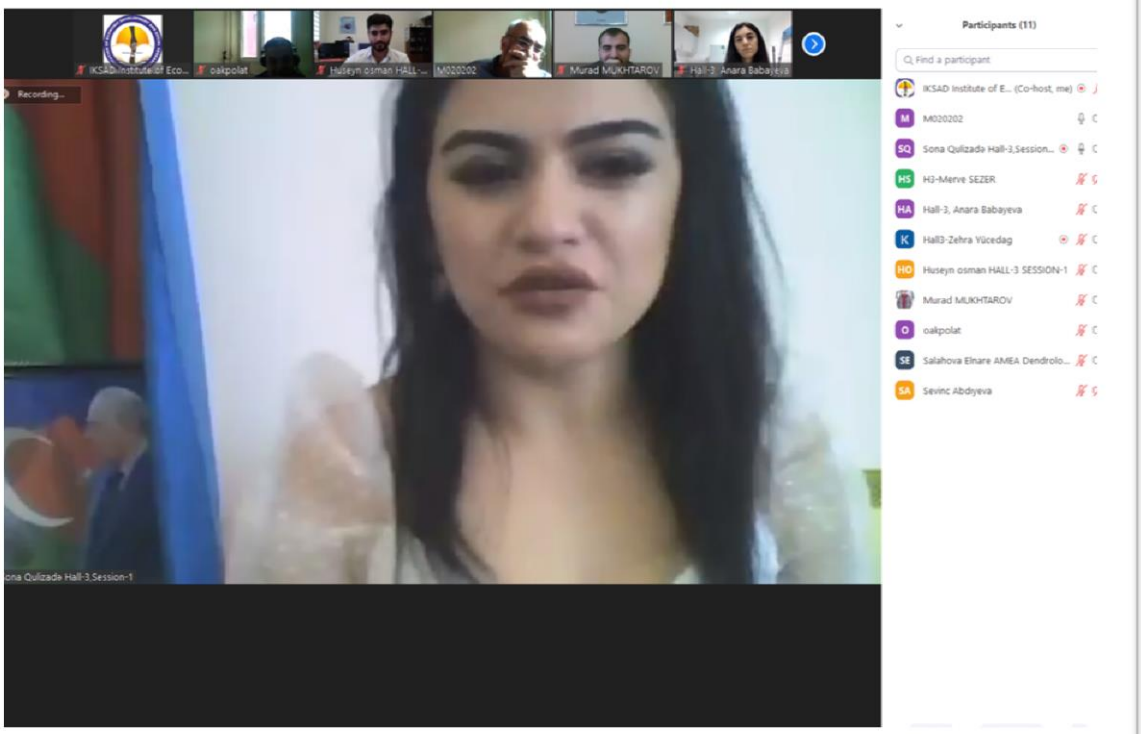

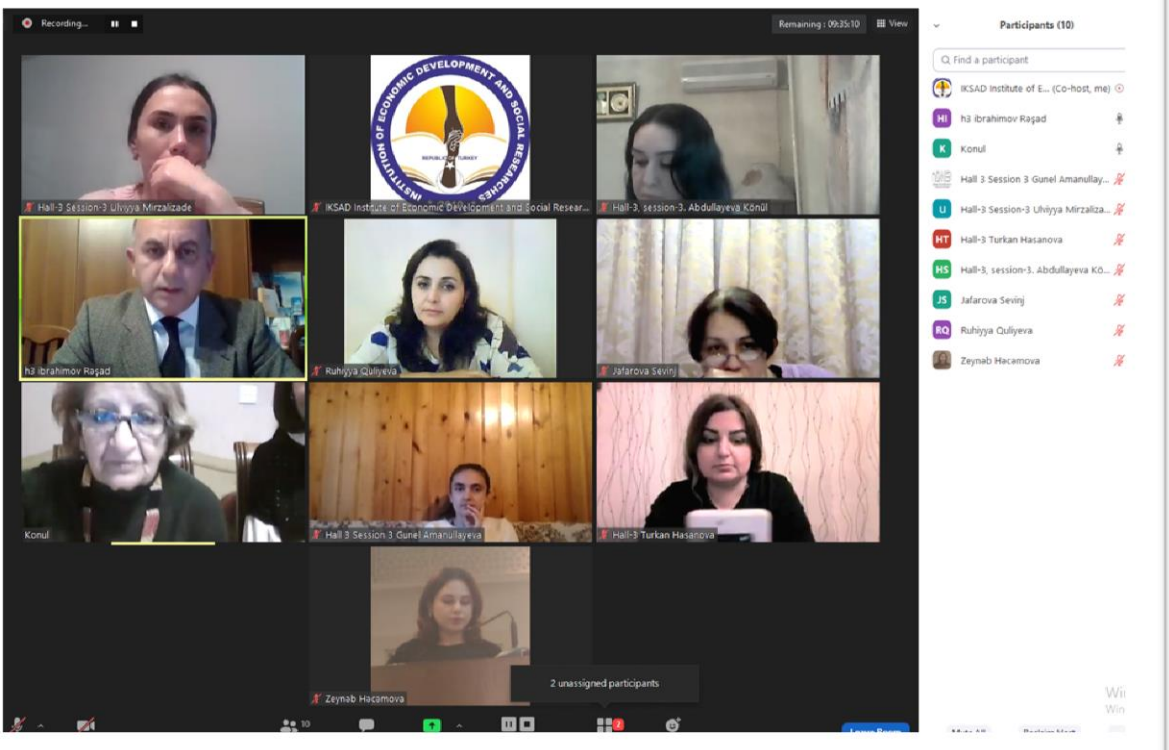

KARABAGH

II-INTERNATIONALCONGRESS OF APPLIED SCIENCES

November 8-10, 2021
Karabagh, Azerbaijan

CONGRESS PROGRAM

Zoom Meetings ID:854 8243 4224
Zoom Meetings Password:020202

IMPORTANT, PLEASE READ CAREFULLY

- To be able to make a meeting online, login via **https://zoom.us/join**site, enter ID instead of "Meeting ID
- or Personal Link Name" and solidify the session.
- The presentation will have **15 minutes**(including questions and answers).
- The Zoom application is free and no need to create an account.
- The Zoom application can be used without registration.
- The application works on tablets, phones and PCs.
- Speakers must be connected to the session **10 minutes before**the presentation time.
- All congress participants can connect live and listen to all sessions.
- During the session, your camera should be turned on at least %70 of session period
- Moderator is responsible for the presentation and scientific discussion (question-answer) section of the session.

TECHNICAL INFORMATION

- Make sure your computer has a microphone and is working.
- You should be able to use screen sharing feature in Zoom.
- Attendance certificates will be sent to you as pdf at the end of the congress.
- Moderator is responsible for the presentation and scientific discussion (question-answer) section of the session.

Before you login to Zoom please indicate your name surname and hall number, exp.Hall-1, Shahla Tahirgizi

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ÖNEMLİ, DİKKATLE OKUYUNUZ LÜTFEN

- Kongremizde Yazım Kurallarına uygun gönderilmiş ve bilim kurulundan geçen bildiriler için online (video konferans sistemi üzerinden) sunum imkanı sağlanmıştır.
- Sunumlar için **15 dakika**(soru ve cevaplar dahil) süre ayrılmıştır.
- Online sunum yapabilmek için **https://zoom.us/join**sitesi üzerinden giriş yaparak "Meeting ID or Personal Link Name" yerine ID numarasını girerek oturuma katılabilirsiniz.
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- Zoom uygulaması kaydolmadan kullanılabilir.
- Uygulama tablet, telefon ve PC'lerde çalışıyor.
- Her oturumdaki sunucular, sunum saatinden **10 dk öncesinde**oturuma bağlanmış olmaları gerekmektedir.
- Tüm kongre katılımcıları canlı bağlanarak tüm oturumları dinleyebilir.
- Moderatör – oturumdaki sunum ve bilimsel tartışma (soru-cevap) kısmından sorumludur.

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- Bilgisayarınızda mikrofon olduğuna ve çalıştığına emin olun.
- Zoom'da ekran paylaşma özelliğine kullanabilmelisiniz.
- Katılım belgeleri kongre sonunda tarafınıza pdf olarak gönderilecektir
- Kongre programında yer ve saat değişikliği gibi talepler dikkate alınmayacaktır

Zoom'a giriş yaparken önce lütfen adınızı, soyadınızı ve SALON numaranızı yazınız
Örnek: Salon-1, Shahla Tahirgizi

-Opening Ceremony-

ANAS Conference Hall

08.11.2021

Baku Local Time: 10:^{00}–11:^{00}

Ankara Local Time: 09:^{00}–10:^{00}

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Demonstration of the video clip on "Zafar Gunu" (Day of Victory in 2nd Karabakh War)

SPEECHES:

Academician Ramiz MEHDİYEV

President of Azerbaijan National Academy of Sciences (ANAS)

PRESİDENT OF THE CONGRESS

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First Vice-President of ANAS, Academician-Secretary of ANAS

Academician Irada HUSEYNOVA

Vice-President of ANAS

CHAIRMAN OF THE CONGRESS ORGANIZING BOARD

Dr. Mustafa Latif EMEK

President of IKSAD Institute

08.11.2021 Hall-1, Session-1	Baku Time 11^{00} : 13^{30}	Ankara Time 10^{00} : 12^{30}	ID: 854 8243 4224 Password: 020202

HEALTH SCIENCES

HEAD OF SESSION: Doç. Dr. Handan ÖZCAN; Prof. Dr. Akif Gurbanov

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Musayev S.A. Qurbanov E.F.	*Scientific Center of surgery named after M.A. Topchubashov*	MODERN PRINCIPES OF DIAGNOSIS AND SURGICAL TREATMENT OF ISCHEMIC MITRAL INSUFFICIENCY
H.B.Isaev T.M.Kerimova Akif Aghbabali	*Doctor of Medical Sciences Department of Gastroenterology Baku State University*	QUALITY OF LIFE OF PATIENTS UNDERGOING SUBTOTAL COLECTOMY FOR CHRONIC COLOSTAS
Rugıyya SAMADZADE Nurullah ÇİFTCİ Salih MAÇİN	*Selçuk Üniversitesi*	INVESTIGATION OF ENTAMOEBA HISTOLYTICA PRESENCE IN STOOL SAMPLES BY ELISA METHOD
Gunel Haji Elcin Quliyev Nailə H.Quliyeva Isa Isayev	*National Centre of Oncology*	DOSIMETRIC COMPARISON OF FREE-BREATHING AND DEEP INSPIRATION BREATH-HOLD RADIOTHERAPYFOR ADVANCED STAGE LEFT-SIDED BREAST CANCER PATIENTS
Afandiyev I. N.	*Azerbaijan Medical University*	COVID-19 PANDEMIC AND POISONING EPIDEMIOLOGY IN AZERBAIJAN
Merve Yapıcı Handan ÖZCAN	*Etlik Zübeyde Hanım Kadın Hastalıkları Eğitim ve Araştırma Hastanesi Sağlık Bilimleri Üniversitesi*	MOTHER-BABY BINDING IN IMMIGRANT WOMEN
Pirana Isgandarova Imanova Alamdar Charkaz Mammadov	*Institute of Molecular Biology Biotechnologies of ANAS*	DIAGNOSIS OF CIRCULATING CONCENTRATIONS OFHUMAN GROWTH HORMONE (HGH) AND INSULIN-LIKEGROWTH FACTOR (IGF) BEFORE THE INFECTION WITH COVID-19 AND RISK OF DEATH
Lala Rustamova Farida Heydarova Svetlana Farajova Akif Gurbanov Mehran Hamzayeva Konul Alazova A.E. Mirzayeva	*Scientific Research Institute of Medical Prevention named after V.Y. Akhundov*	SEASONALITY IN MORBIDITY ASSOCIATED WITH COVID-19AMONG THE POPULATION IN BAKU
Imanova Aynur	*National Centre of Oncology*	THE INFLUENCE OFBEHAVIORALFACTORS IN PATIENTS WITH DIABETES MELLITUS AND DEFINITION OFMENTAL STATUS

08.11.2021 Hall-2, Session-1	Baku Time $11^{00} : 13^{30}$	Ankara Time $10^{00} : 12^{30}$	ID: 854 8243 4224 Password: 020202

HEALTH SCIENCES

HEAD OF SESSION: Dr. Fuad Novruzov; Dr. Zahra Vezirova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Gulmira Nasirova Razida .R.Kaziyeva Ulviya Z. Nabizade Isa. I. Isayev	*National Center of Oncology*	BRACHYTHERAPY IN RADIATION THERAPY FOR ESOPHAGEAL CANCER
Kamal Kazimov Elcin Quliyev Razida Kaziyeva Isa Isayev Nailə Quliyeva	*National Center of Oncology*	VOLUMETRIC MODULATED ARC THERAPY (VMAT) COMBINED WITH GEMCITABIN FOR PANCREATIC CANCER
Safaraliyeva AR Mammadova S.Sh. Vahabova Sh.B. Hasanova N.N.	*Azerbaijan Medical University*	SOME FEATURES OF THE REPRODUCTIVE SYSTEM IN GIRLS SUFFERING FROM CHRONIC TONSILLITIS
Anar Mammadov	*National Center of Oncology*	EPIDEMIOLOGICAL CHARACTERISTICS OF ORAL AND PHARYNGEAL CANCERIN THE ABSHERON ECONOMIC REGION
Ibishova Leyla	*National Center of Oncology*	EPIDEMIOLOGICAL CHARACTERISTICS OF OVARIAN CANCER IN GUBA-KHACHMAZ ECONOMIC REGION
Aliyeva Shovkat	*National Center of Oncology*	EPIDEMIOLOGICAL CHARACTERISTICS OF TRIPLE-NEGATIVE BREASTCANCER IN MOUNTAINOUS SHIRVAN ECONOMIC REGION
Özden Tandoğan Ümran Oskay	*Haliç Üniversitesi* *İstanbul Üniversitesi*	THE EFFECT OF REBOZO TECHNIQUE USED IN DELIVERY ON PERCEIVEDBIRTH PAIN AND BIRTH SATISFACTION
Imanov E.A.	*Azerbaijan Medical University*	METHODS TO INCREASE THEEFFECTIVNESS OF TREATMENT OF THE INFLAMMATORY DISEASESOF PERIODONTIUM IN CHILDREN
Shadlinskaya R. V. Novruzov Z. G	*Azerbaijan Medical University*	MANAGEMENT OF MALOCCLUSION IN CHILDRENWITH BETA THALASSEMIA MAJOR
N.H.Guliyeva N.M.Asgerov G.H.Nasirova U.Z.Nabizade R.R.Kaziyeva	*National Center of Oncology, Azerbaijan*	NEOADJUVANT RADIOTHERAPY FOR PATIENTS WITH RECTAL CANCER USING IMRT

08.11.2021 Hall-3, Session-1	Baku Time $11^{00} : 13^{30}$	Ankara Time $10^{00} : 12^{30}$	ID: 854 8243 4224 Password: 020202

NATURAL SCIENCES

HEAD OF SESSION: Assoc. Prof. Dr. Pembe Sabancıgil

AUTHOR(S)	ORGANISATION	TOPIC TITLE
M. YOUNUS BHAT	*Department of Mathematical Sciences, Islamic University of Science and Technology Awantipora, Pulwama, Jammu and Kashmir 192122, India.*	THE ALGEBRA OF 2D GABOR QUATERNIONIC OFFSET LINEAR CANONICAL TRANSFORM AND UNCERTAINTY PRINCIPLES
Huseyn OSMAN Mehmet UĞURLU Murad MUKHTAROV Oğuz AKPOLAT Ali İmran VAIZOĞULLAR Abdul Jabbar CHAUDHARYD	*Muğla Sıtkı Koçman Üniversitesi*	REMOVAL OF PHENOL USING POLYMER COATED MAGNETIC NANOPARTICULAR ACTIVATED CARBON
Veli B. Shakhmurov	*Antalya Bilim Universitesi*	QUALITATIVE PROPERTIES OF NONLOCAL ABSTRACT WAVE EQUATIONS AND APPLICATIONS
Hilala Jafarova Rovshan Aliyev	*Department of Digital Technologies and Applied Informatics (of UNEC)*	THE PERTURBED MARKOV RANDOM WALK DESCRIBED BY THE AUTOREGRESSIVE PROCESS AR(1) WITH INSURANCE APPLICATION
Sona Gulizada	*ANAS Dendroloji Enstitüsü*	TOMOGRAPHIC ANALYSIS BY THE USE OF ELECTRICAL IMPULSESFOR EXAMINING THE STATE OF WELNESS THE CONDITIONS
Hayatem Hamal Pembe Sabancıgil	*Tripoli University* *Doğu Akdeniz Üniversitesi*	STATISTICAL APPROXIMATION FOR NEW (p,q)- BALAZS SZABADOSOPERATORS
Zehra Yücedag	*Dicle Universitesi*	EXISTENCE NONTRIVIAL WEAK SOLUTIONS FOR A CLASS OF STEKLOV BOUNDARY VALUE PROBLEM INVOLVING THE p(x) LAPLACIAN
Zehra Yücedag	*Dicle Universitesi*	EXISTENCE OF SOLUTIONS FOR NONLOCAL PROBLEMS WITH VARIABLE EXPONENT
Anara Babayeva Emine Sonay Elgin Esra Dibek Merve Sezer Kürkçü Bekir Çöl	*Muğla Sıtkı Koçman Üniversitesi*	INVESTIGATION OF ANTIMICROBIAL EFFECTS OF THE EXTRACTS OBTAINED FROM PROPOLIS SAMPLES COLLECTED FROM RIZE AND ARTVIN REGIONS IN TURKEY

08.11.2021 Hall-4, Session-1	Baku Time 11^{00} : 13^{30}	Ankara Time 10^{00} : 12^{30}	ID: 854 8243 4224 Password: 020202

HEALTH SCIENCES

HEAD OF SESSION: Dr. Emil Iskandarov

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Veliyeva Giyafat Vaqif	*Azərbaycan Tibb Universiteti*	PREVENTIVE IMMUNOMODULATORY THERAPY OF DACRYOCYSTITIS OF NEWBORNS.
Rasulova L.T. Huseynova S.A.	*Azerbaijan Medical University*	DIFFERENTIATED APPROACH TO THE NUTRITION OF PREMATURE BABIES
Aytakin Hasanova Khadija Yusufova	*Azerbaijan Medical University*	GENETIC SCREENING
Saidova F.Kh. Shakhsuvarov O.M. Aslanova J.B. Mayilova A.A. Babirov S.S. Safarova L.Sh. Aliyeva N.Z.	*Acad'ın adını taşıyan Cerrahi Bilim Merkezi*	LONG-TERM RESULTS OF VARIOUS VOLUMES OF SURGICAL INTERVENTIONS IN PATIENTS WITH NODULAR AND MULTINODULAR EUTHYROID GOITERS
Hüseynova Elnarə Cəbrayıl qızı	*Gence Devlet Üniversitesi*	EFFECT OF THE NERVOUS SYSTEM ON THE AGING PROCESS
P.KH.GARAKHANİ	*ANAS BOTANİK ENSTİTÜSÜ*	BIOECOLOGICAL CHARACTERISTICS OF THE GENUS GAGEA
Rashad Sholan Ulduz Hashimova	*Azerbaycan Ulusal Bilimler Akademisi*	A NEW VIEW ON THE IMMUNO PATHOPHYSIOLOGY OF INTERSTITIAL CYSTITIS
Akhundov Parviz Yashar	*Ulusal Spor Hekimliği ve Rehabilitasyon Enstitüsü*	NEUROPHYSIOLOGICAL CHARACTERISTICS OF POSTTRAUMATIC INJURY OF THE PERIPHERIC NERVOUS SYSTEM
Akhundov Parviz Yashar	*Ulusal Spor Hekimliği ve Rehabilitasyon Enstitüsü*	METHODS OF REHABILITATION WITH PHYSICAL FACTORS IN LOW BACK PAIN
V.T.Məmmədov N.E.İsmayılova	*Milli Onkoloji Merkezi Azerbaycan*	NOSOCOMICAL INFECTIONS AND SENSITIVITY TO ANTIBIOTICS IN CHILDREN' CLINIC

08.11.2021 Hall-5, Session-1	Baku Time $11^{00} : 13^{30}$	Ankara Time $10^{00} : 12^{30}$	ID: 854 8243 4224 Password: 020202

HEALTH SCIENCES

HEAD OF SESSION: Dr. Nigar Mehdiyeva; Dr. Rafiq Bayramov

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Zeynab Hajamova	*Azerbaycan Milli İlimler Akademisi*	THE SOCIO-PSYCHOLOGICAL ANALYSIS OF THE FEATURES OF SOCIAL PERCEPTION AND INTERACTION EFFECT WITH EMOTIONAL INTELLIGENCE IN PANDEMY CONDITIONS
Ismailova Shalala Ahadova Fidan Musayeva Tarana Mammadova Irada	*Azerbaijan Medical University*	ASSESSMENT OF THE FUNCTIONAL STATE OF THE KIDNEY AND VASCULAR ENDOTELIUM IN CHRONIC KIDNEY DISEASES
Masma Shahbazova Nurullah Ciftci Ugur ARSLAN	*Selçuk Üniversitesi*	SYPHILIS POSITIVITY IN A UNIVERSITY HOSPITAL
A. Hüseynov	*Bakü Devlet Üniversitesi*	EPIGENETIC INSIGHT INTO THE ROLE OF DNA METHYLATION IN CANCER
Mahbuba Veliyeva Farah Madatli	*Azerbaijan Medical University*	CREATION OF SOMEPHARMACEUTICAL PRODUCTS ON THE BASIS OF LICORICE (Glycyrrhiza L.) AND IMPLEMENTATION IN THE NATIONAL INDUSTRIAL PARK "BIYAN".
Tarlana Jafarova Khatira Mirzayeva Aybeniz Qojayeva Khuraman Zeynalova	*Azerbaijan Medical University*	INTESTINAL DYSBACTERIOSIS AS A FACTOR IN PREGNANCY DISORDERS
Aliyeva S.E.	*Azerbaijan Medical University*	PROBLEMS OF TREATMENT OF DEPRESSION INCHILDREN WITH EPILEPSY
Anara Babayeva Bekir Çöl Esra Dibek Merve Sezer Kürkçü	*Muğla Sıtkı Koçman Üniversitesi*	ARTIFICIAL HIGHER EXPRESSION OF YJBO GENE CONFERS TOLERANCE AGAINST EPETRABOROLE ANTIBIOTIC INESCHERICHIA COLI
Azimov E.H. Namazov A.E. Qapaqov F.M.	*Azerbaijan Medical Universitesi*	COMPARATIVE ANALYSIS OF CLOSE OUTCOMES OF TOTAL MESORECTAL EXCISION IN MALIGNANT DERIVATIVES
Namazov A.E. Azimov E.H. Qapaqov F.M.	*Azerbaijan Medical Universitesi*	NERVE CONGESTION IN THE ABDOMINAL AND PLEATED DUCTS OF THE FLAT BOWEL SOME ASPECTS OF SURGICALCLASSIFICATION

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HEALTH SCIENCES

HEAD OF SESSION: Dr. Aynur Safiyeva; Dr. Namiq Novruzov

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Novruzov N.H. Aliyev E.A. Bayramov N.Y.	*Azerbaijan Medical University*	PROGNOSTIC ACCURACY OF THEEXTRACELLULAR HISTONES FOR LIVER DYSFUNCTION AFTER DONORHEPATECTOMY
Namazov AE Maharramov DM Rustam AM Zeynalov BM Aliyev T.Q. Bayramov N.Y.	*Azerbaijan Medical University*	IMPROVING RESULTS IN RECONSTRUCTIVE SURGERY FOR LARGE AND EXTREMELY LARGE WAR WOUNDS
Bayramov N.Y. Zeynalov S.M. Namazov A.E Zeynalov BM İmanova SS Mahmudov MG Rustam AM	*Azerbaijan Medical University*	LAPAROSCOPIC TREATMENT OF HYDATID CYST OF THE SPLEEN
Bayramov N.Y. Zeynalov S.M. Namazov A.E. Zeynalov N.A. Zeynalov BM Rustam AM Gapagov FM	*Azerbaijan Medical University*	LAPAROSCOPIC TREATMENT OF HEPATIC HYDATID CYSTS
Shirinova Kh. Hummatov A.	*Azerbaijan Medical University*	VITAMIN D DEFICIENCY IN AUTOIMMUNE THYROIDITIS
Imanova SS Zeynalov BM	*Azerbaijan Medical University*	THE ROLE DEFECOGRAPHY IN THE DIAGNOSIS PROLAPSE OF THE RECTUM
Ə.C.Əliyev N.X.Əliyeva	*Milli Onkologiya Mərkəzi*	CALCITONIN AS A TUMOR MARKER OF MEDULLARY THYROID CARCINOMA
Ahmed Ouezgan Said Adima Aziz Maziri El Hassan Mallil Jamal Echaabi	*Kazablanka Üniversitesi*	NON-ISOTHERMAL RTM FILLING STAGE COUPLED WITH CURING EFFECT
L.I. Rustamova F.H. Heydarova S.M. Farajova A.I.Gurbanov M.M.Hamzayeva K.S. Alazova A.E. Mirzayeva	*Tıbbi Önleme Bilimsel Araştırma Enstitüsü*	SEASONALITY IN MORBIDITY ASSOCIATED WITH COVID-19 AMONG THE POPULATION IN BAKU
Huseynova Gulgiz Agahasan	*Azerbaycan Medikal Üniversitesi*	THE REGİONALLY FEATURES OF THE LYMPHOID STRUCTURES OF THE URINARY BLADDER

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HEALTH SCIENCES

HEAD OF SESSION: Dr. Rasim Jafarli; Dr. Yasmin Rustamova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Sattar Mammadzada Famil Humbatov	*Azerbaycan Milli İlimler Akademisi*	EVALUATION OF WATER QUALITY OF SAMPLES FROM KALBAJAR, AZERBAIJAN
Agayev R.M. Jafarli R.E.	*Azerbaijan Medical University*	APPLICATION OF “NONSTRAIN” HERNIOPLASTY IN STRANGULATED VENTRAL HERNIA WITH MONITORING OF INTRA-ABDOMINAL PRESSURE
Jafarli R.E. Mamedov E.G.	*Azerbaijan Medical University*	COMPARATIVE RESULTS OF "EARLY SURGERY" AND "DELAYED SURGERY" FOR GUNSHOT WOUNDS
Jafarli R.E.	*Azerbaijan Medical University*	MORPHOFUNCTİONAL AND STRUCTURAL ORGANIZATION OF STEM CELLTRANSPLANTATION IN THE TREATMENT OF LIVER CIRRHOSIS
Mamedov A.A. Jafarli R.E. Malikova S.A.	*Azerbaijan Medical University*	EXCESS BACTERIAL GROWTH IN THE SMALL INTESTINE DURING ENDOSCOPIC TREATMENT OF PATIENT WITH ACUTE BILIARY PANCREATITIS
Mamedov A.A. Jafarli R.E. Malikova S.A.	*Azerbaijan Medical University*	THE TIMING OF LAPAROSCOPIC CHOLECYSTECTOMY AFTER ENDOSCOPIC RETROGRADECHOLANGIOPANCREATICOGRAPHY IN CHOLELITHIASIS AND CHOLEDOCHOLITIASIS
Tarana M.Javadova	*Kardiyoloji Enstitüsü*	RESULTS OF THE COMBINED USE OF PERCUTANEOUS CORONARY INTERVENTION AND DRUG REVASCULARIZATION IN PATIENTS WITH CORONARY ARTERY DISEASE WORKING IN ENVIRONMENTALLY CHALLENGING CONDITIONS
VELİYEVA M.N.	*Azerbaijan Medical University*	LYMPHATIC DRUGS OF LICORICE IN THE TREATMENT OF COVID-19 INFECTION
Farkhadzade K.B. Vatanxa S.S.	*Azerbaycan, Ulusal Onkoloji Merkezi*	POSSIBILITIES OF X-RAY MAMOGRAPHY IN THE EARLY DIAGNOSIS OF NON-PALPABLE MALIGNANT TUMORS OF THE MAMMARY GLANDS.

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AGRICULTURAL SCIENCES

HEAD OF SESSION: Prof.Dr. Shahniyar Bayramov ; Dr. Isamayil Zulfigarov

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Cristina Dias Carla Santos	*University of Lisbon*	METHODS FOR ADAPTABILITY AND STABILITY ANALYSIS IN DURUM WHEAT CULTIVARS
Uzma Ayaz	*The University of Poonch Rawalakot*	GENETIC VARIABILITY, ASSOCIATION AND DIVERSITY STUDY AMONG THE SUNFLOWER GENOTYPES AT SEEDLİNG STAGE BASED ON DIFFERENT MORPHO-PHYSIOLOGICAL PARAMETERS UNDER POLYETHYLENE GLYCOL INDUCED STRESS
Garib Mammadov Akif Aghbabali	*Azerbaijan National Academy of Sciences* *Baku State University*	BASIC PRINCIPLES OF AGROECOLOGICAL ZONING IN THE LIBERATED TERRITORIES OF AZERBAIJAN
Maharram Babayev Firoza Ramazanova	*Azerbaycan Milli İlimler Akademisi*	THE INFLUENCE OF AGRICULTURAL USE OF SOILS OF THE DRY SUBTROPICAL ZONE ON ITS MORPHOLOGICAL PROPERTIES
A.A. Bayramov A.B. Pashaev E.N. Sabziev M.M. Tatur Aleksandr Konikov	*ANAS Control Systems Institute* *Belarusian State University*	MODEL OF NAVIGATION AND CONTROL OF UNMANNED GROUND VEHICLES USED IN AGRICULTURE
A.F.Gadjieva I.V.Huseynova	*Genetic Resources Institute, ANAS*	PECULIZARITIES OF SYNTHSIS OF DNA AS METHOD OF EVALUATION OFGENE FUND OF FRUIT AND BERRY CROPS ON ABSHERON PENINSULAR
Y.S. Khidirova Huseynzadeh Z.N.	*ANAS Institute of Genetic Resources*	STUDY OF PISTACHIO (PISTACIA VERA L.) IN ABSHERON CONDITIONS
Vusala Isaqova Naila Orujova Rafiga Babayeva	*Bilim insanı Azerbaycan Ulusal İlimler Akademisi*	ACTIVITY OF INVERTASE FERMENT IN IRRIGATED MEADOW-GREY SOILS
Zumrud Mammadova Gullu Aliyeva	*ANAS, Institute of Dendrology* *Azerbaycan Milli İlimler Akademisi*	STUDY OF MORPHOLOGICAL POLYMORPHISM IN THE LEAVES OF CAUCASIAN OAK (QUERCUS MACRANTHERA SUBSP. SYSPIRENCIS (K.KOCH) MENITSKY)

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NATURAL SCIENCES

HEAD OF SESSION: Prof.Dr. Yasin Rustamov; Dr. Mehrac Abbasov

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Y. I. Rustamov Sh.S.Askerova	*Institute of Soil Science and Agrochemistry of ANAS*	DETERMINATION OF SOIL FERTILITY BASED ON A STATIC ASSESSMENT
Turkan Hasanova Allahverdi	*Institute of Soil Science and Agrochemistry of ANAS*	BIOLOGICAL DIAGNOSTICS IN AGROECOLOGY (ON GRAY-BROWN SOILS OF GOYCHAY REGION, AZERBAIJAN)
Naila Orujova Gunay Mammadova Rahila Sadiqova	*Institute of Soil Science and Agrochemistry of ANAS*	BIOLOGICAL ESTIMATED OF IRRIGATED SOILS OF SUBTROPICAL ZONE USED UNDER VEGETABLE CULTURES
Zeynal Akparov Xanbala Рустамов Mehrac Abbasov Abidin Abdullayev	*ANAS Genetik Kaynaklar Enstitüsü*	CREATION OF NEW VARIETIES OF DURABLE WHEAT (T. durum Desf.) FOR THE KARABAKH REGION
T.Gadjiev Y.Rustamov T.Maharramova	*Azerbaijan National Academy of Sciences*	THE REGULARITY OF SOLUTIONS DEGENERATE NONLINEAR ELLIPTIC EQUATIONS
Asadova N.Q. Mustafayeva L.A.	*Institute of Botany, Azerbaijan National Academy of Sciences*	THE PECTIN CONTENT OF *PRUNELLA VULGARIS* L.
Ibragimov Aliyar Nabiyeva Fatmakhanum Khalid Huseynova Ilhama Mehraj	*Institute Dendrology of the NationalAcademy of Sciences of the Republic of Azerbaijan*	NEW AND RARE PLANTS OF KARABAKH FLORA
Ulaş UĞUZ Aykut GÜVENSEN	*Ege Universitesi*	CONCENTRATIONS OF DOMINANT AIRBORNE POLLEN IN IZMIR CITY, TURKEY (2020)
Yegana Manafova	*ANAS Toprak Bilimi ve Agrokimya Enstitüsü*	CHANGE OF STRUCTURAL-AQGGREGAE COMPOSITION OF GREY- BROWN SOILS DEPENDING OF VERTICAL ZONING
Milena Nikolova Genadi Gavrilov Anna Gavrilova Elina Yankova-Tsvetkova Strahil Berkov	*Bulgarian Academy of Sciences*	METHANOLIC EXTRACT OF SATUREJA KITAIBELLI AS INHIBITOR ON SEED GERMINATION

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AGRICULTURAL SCIENCES

HEAD OF SESSION: Dr. Samira Rustamova; Dr. Ulkər Ibrahimova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Kenul Tagieva Ulker Ibrahimova Ibrahim Azizov	*Institute of Molecular Biology and Biotechnologies of ANAS*	EFFECT OF NACI ON PHYSIOLOGICAL CHARACTERISTICS OF MAIZE (Zea mays L.) GENOTYPES
Bengü TÜRKYILMAZ ÜNAL Hüseyin TÜRKER Münir ÖZTÜRK	*Niğde Ömer Halisdemir Universitesi* *Ege Universitesi*	EX-SITU CONSERVATION OF ENDEMIC SALVIA SPECIES BY MICROPROPAGATION TECHNIQUE
Samira Mahammadrahim Rustamova Gulnar Rizvan Abdullayeva Irada Mammad Huseynova	*Azerbaycan Milli Akademisi*	ISOLATION AND IN-SILICO CHARACTERIZATION OF DREB GENE FROM GENOME DONOR SPECIES OF WHEAT FOUND IN AZERBAIJAN
I.M. Huseynova S.T. Mirzayeva	*Institute of Molecular Biology & Biotechnologies of ANAS*	SEROLOGICAL AND MOLECULAR IDENTIFICATION OF TOMATO YELLOW LEAF CURL VIRUS IN AZERBAIJAN
Zarintaj R. Rustamova Najaf A. Museibli Nurmammad Sh. Mustafayev İrada M. Huseynova	*Moleküler Biyoloji ve Biyoteknoloji Enstitüsü* *Arkeoloji, Etnografya ve Antropoloji Enstitüsü*	SOME ARCHEOBIOLOGICAL MATERIALS OF THE LATE BRONZE-EARLY IRON AGE FROM THE TERRITORY OF AZERBAIJAN
T.Y. Isgandarova S.M. Rustamova I.M. Huseynova	*Azerbaycan Ulusal Bilimler Akademisi*	EVALUATION OF FLAG LEAF SENESCENCE BASED ON CELL MEMBRANE STABILITY UNDER DROUGHT
L.M. Aydinli D.R. Aliyeva I.M. Huseynova	*Institute of Molecular Biology and Biotechnologies of ANAS*	PHOTOSYNTHETIC GAS EXCHANGE PARAMETERS IN LEAVES OF BREAD WHEAT VARIETIESEXPOSED TO DROUGHT AND REWATERING
Vusala Badalova Zumrud Mammadova	*ANAS, Dendroloji Enstitüsü*	EVALUATION OF MEDICINAL AND NUTRITIONAL IMPORTANCE OF THE TROPICAL MARACUA FRUITS
Jamala R. Orujova	*ANAS Moleküler Biyoloji ve Biyoteknoloji Enstitüsü*	EFFECT OF GAMMA RADIATION ON GRAIN QUALITY INDICES OF A BREAD WHEAT (Triticum aestivum L.) GENOTYPE NURLU 99
Mayakhanim Khanishova Ibrahim Azizov	*ANAS Moleküler Biyoloji ve Biyoteknoloji Enstitüsü*	COMPARATIVE EVALUATION OF SOME PHYSIOLOGICALCHARACTERISTICS AND PRODUCTIVITY ELEMENTS IN THE SECOND GENERATION HYBRIDS AND PARENTAL FORMS OF WHEAT VARIETIES EXPOSED TO NACL

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ENGINEERING SCIENCES

HEAD OF SESSION: Prof.Dr. Salim Newaz Kazi; Prof.Dr. Yashar Feyziyev

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Ünsal AYBEK Lütfü NAMLI	*Tokat Gaziosmanpaşa Üniversitesi* *Ondokuz Mayıs Üniversitesi*	THE EFFECTS OF DETERMINED DECISION VARIABLES ON SOLID OXIDE FUEL CELL PERFORMANCE AND EXERGETIC OPTIMIZATION BY GENETIC ALGORITHM METHOD
Sayiter YILDIZ Can Bülent KARAKUŞ	*Sivas Cumhuriyet Üniversitesi*	LIFE CYCLE ASSESSMENT AND APPLICATION AREAS
Sayiter YILDIZ Can Bülent KARAKUŞ	*Sivas Cumhuriyet Üniversitesi*	INVESTIGATION OF THE RELATIONSHIP BETWEEN GEOMORPHOLOGICAL UNITS AND LAND USE IN SIVAS CITY CENTER AND ITS CLOSE SURROUNDINGS
İsmail KILIÇ	*Kırklareli Üniversitesi*	PROBLEMS IN PRODUCTION OF ROLLER COMPACTED CONCRETE SAMPLE IN LABORATORY CONDITIONS
Hilala Jafarova Rovshan Aliyev	*Department of Digital Technologies and Applied Informatics (of UNEC)* *dept. of Operation Research and Probability Theory (of BSU)*	THE PERTURBED MARKOV RANDOM WALKDESCRIBED BY THE AUTOREGRESSIVEPROCESS AR(1) WITH INSURANCEAPPLICATION
Kinga Korniejenko	*Cracow Üniversitesi*	FRACTURE BEHAVIOUR OF LONG FIBER REINFORCED GEOPOLYMERCOMPOSITES
Fathi Ghezal	*Laboratoire N-corps & Structure de la Matière : LNCSM Ecole Normale Supérieure Kouba* *Corresponding author*	NEW BUFFER LAYER FOR CISe THIN FILM SOLAR CELLS
Rabie SAIFI	*Batna Üniversitesi*	EKF BASED SPEED SENSORLESS DIRECT TORQUE CONTROL SYSTEM FOR IMS
Rabie SAIFI	*Batna Üniversitesi*	DIRECT TORQUE CONTROL FOR INDUCTION MOTOR DRIVES USING AMPLITUDE AND ANGLE OF THE STATOR FLUX CONTROL

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NATURAL SCIENCES

HEAD OF SESSION: Prof.Dr. Tofiq Allahverdiyev; Prof.Dr. Vilayet Abdiyev

AUTHOR(S)	ORGANISATION	TOPIC TITLE
ROUAG FAIZA FERHATI HABIBA DJEMLI SAMIR	*Badji Mokhtar Universitesi*	RENAL STUDY OF THE EFFECT OF FENUGREEK IN RATS
Garayev Sadig Gurban	*Central Botanical Garden of ANAS*	BOTANICAL AND GEOGRAPHICAL ANALYSIS OF MESOTHERMIC RELICTS OF TURGAI FLORA OF AZERBAIJAN
Hajiyeva Ilaha Nazar	*Ganja Branch of the Azerbaijan National Academy of Sciences*	EFFECTS OF SALT STRESS ON PHOTOSYNTHESIS PARAMETERS OF SOME (BETA VULGARIS L.) VARIETIES
Esra Koç Belgizar Karayiğit	*Ankara Universitesi*	NITRATE CONTENT IN ROOTS OF RESISTANT AND SUSCEPTIBLE PEPPER (Capsicum annuum L.) CULTIVARS INFECTED BY Phytophthora capsici L.
İlayda Sezin YALÇINKAYA Leyla AÇIK Gülnihal Kulaksız-ERKMEN Onur AKTAN	*Gazi Üniversitesi* *Hacettepe Üniversitesi*	BIOLOGICAL ACTIVITY OF PLANT ROOT EXTRACTS FROM ROSA CANINA L.
Mahira Mammedova Ulviyya Mahyaddinova Vusala Jafarova	*Moleküler Biyoloji ve Biyoteknoloji Enstitüsü ANAS*	FEATURES OF IN VITRO CALLUS TYPES AND THEIR APPLICATION IN CELL SELECTION
Vilayet Abdiyev Sevinj Ismayilova Nigar Aliyeva Boyukkhanim Jafarzadeh	*Baku State University*	THE INFLUENCE OF SALICYLIC ACID ON THE ABSORPTION OF OXYGEN INTHE WHEAT SPROUT ROOTS
Tofig Garagezov Mahira Mammedova Gunay İsmayilova	*Moleküler Biyoloji ve Biyoteknoloji Enstitüsü ANAS*	MODEL SYSTEMS OF GRADIENT AGAROPONICS AND PROSPECTS OF THEIR APPLICATION

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NATURAL SCIENCES

HEAD OF SESSION: Dr. Rashad Salimov; Dr. Samra Mirzayeva

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Aygun Sadigova	*Moleküler Biyoloji ve Biyoteknoloji Enstitüsü ANAS*	FEATURES OF CULTIVATION OF THE SHIRVAN-SHAHI GRAPE VARIETY DURING MICROPROPAGATİON
Nahida Aliyeva Zibeyda Hajiyeva Saftar Süleymanov	*Institute of Molecular Biology and Biotechnologies, Azerbaijan National Academy ofSciences*	EFFECTS OF HIGH SALT CONCENTRATIONS ON FUNCTIONALCHARACTERISTICS OF MAIZECHLOROPLASTS
Turana Arzu Hasanova Almas Israfil Asadova Afat Mammadova	*Genetic Resources Institute of Azerbaijan National Academy of Sciences*	EVALUATION OF DISEASE RESISTANCE AND GENETIC VARIATION IN THECOMMON BEAN (PHASEOLUS VULGARIS L.) COLLECTION
Gurbanova Ulduza	*Institute of Molecular Biology & Biotechnologies, Azerbaijan National Academy of Sciences*	ACTIVITIES OF C4-PHOTOSYNTHETIC ENZYMES IN BREAD WHEAT GENOTYPES
Musayeva S.V. Babayev H.G. Guliyev N.M.	*Moleküler Biyoloji ve Biyoteknoloji Enstitüsü, ANAS*	COMPARATIVE STUDY OF SUBCELLULAR DISTRIBUTION OF THE OXALOACETATE DECARBOXYLASE ACTIVITY IN CHICKPEA AND MAIZE LEAVES
Ersin YÜCEL	*Eskişehir Teknik Üniversitesi*	DETERMINATION AND CONSERVATION OF FOREST FRUIT GENE RESOURCES OF CENTRAL ANATOLIA
Khalil Kasumov	*Botanik ANAS Enstitüsü, Hücre Biyofiziği*	THE PREPARATION AGAINST VIRAL, BACTERIAL AND FUNGI INFECTION
Ali Ikram Farhan Saeed Muhammad Afzaal	*Devlet Koleji Üniversitesi Yaşam Bilimleri Fakültesi Gıda Bilimleri Bölümü, Faysalabad, Pakistan*	NUTRITIONAL COMPOSITION AND BIOACTIVE MOIETIES OF CARROT BY-PRODUCT WITH SPECIAL REFERENCE TO ITS HEALTH PERSPECTIVES
Gunay Zakiyeva Fadime Demirel Tarlan Mamedov	*Institute of Molecular Biology and Biotechnologies of ANAS Akdeniz Universitesi*	CLONING AND GENE EXPRESSION OF PHOSPHOGLYCOLATE PHOSPHATASE GENES FROM EUKARYOTE GREEN ALGAE CHLAMYDOMONAS REINHARDTII

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NATURAL SCIENCES

HEAD OF SESSION: Prof.Dr. Amin İsmayilov; Dr. Samira Bagirova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Rauf Lutfali Sultanov Vusala Elkhan Hajiyeva	*Azerbaijan State Pedagogical University*	ORGANIZATION OF WORK IN THE PROCESS OF COHERENT TEACHING OF BIOLOGY AND GEOGRAPHY
Ismayilov Amin Ismayil Babayev Maharram Pirverdi Huseynova Sultan Maharram	*ANAS Toprak Bilimi ve Tarım Kimyası Enstitüsü*	CREATION OF A DIGITAL SOIL MAP OF AZERBAIJAN (1: 500,000) USING GEOINFORMATION TECHNOLOGIES
LEILA GASIMOVA	*ANAS Toprak Bilimleri ve Tarımsal Kimya Enstitüsü*	URBAN SOILS AND SOIL POLLUTION BY THE EXAMPLE OF BAKU
Musayeva S.E.	*Azərbaycan Tibb Universitesi*	SEARCH AND DEVELOPMENT OF PLANT ORIGIN PRODUCTS BASED ON NATURAL RAW MATERIALS OF THE KARABAKH
Tofig Sadiq Mammadov Samira Behbud Bagirova Minara Yunis Hasanova	*ANAS Dendroloji Enstitüsü*	BIODIDIVERSITY GREAT KARABAKH TERRITORY OF THE SMALL CAUCASUS
A.A.Garibov J.A.Naghiyev B.F.Ahmadov N.N.Ilyasov N.N.Abbaszade A.B.Hajiyev P.M.Hasanzade	*Ulusal Nükleer Araştırma Merkezi*	RESULTS OF PRELIMINARY RADIOLOGICAL SURVEYS OF THE LIBERATED TERRITORIES
Tekin Yeken	*Kocaeli Üniversitesi*	A TYPICAL TUMULUS STUDY USING GEOELECTRIC METHODS FOR ARCHAEOGEOPHYSICS
A.A.Garibov J.A.Naghiyev V.M.Abbasov A.J.Mikayilova A.B.Hajiyev B.F.Ahmadov	*Ulusal Nükleer Araştırma Merkezi*	RADIOLOGICAL RESULTS OF HYPER THERMAL WATER SOURCES IN KALBAJAR

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NATURAL SCIENCES

HEAD OF SESSION: Prof.Dr. Pərvin Mammadova, Könül Qəhrəmanova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Rashad Ibragimov	*Azerbaijan Medical University*	THE INFLUENCE OF HEAVY METALS SALTS MIXTURE ON BEHAVIORALREACTIONS IN EXPERIMENTAL ATHEROSCLEROSIS
Mahbuba Velieva Rashad Ibragimov	*Azerbaijan Medical University*	INFLUENCE OF A COMPLEX PLANT ANTITOXICANT ON HEMATOLOGICAL INDICATORS AT POISONING WITH HEAVY METAL SALTS
Amanullayeva G.I. Bayramova Z.E. Mirzalizade U.A.	*Azerbaycan Devlet Petrol ve Sanayi Üniversitesi*	OBTAINING OF GYPSUM WASTE BASED FERTILIZERS
Elshan Asadov Oktay Tagiev Gulcahan Hadjieva	*ANAS Fizik Enstitüsü*	INVESTIGATION OF LUMINESCENCE OF Ca (Al x Ga 1 – x) 2 S 4 :Eu 2+ SOLID SOLUTIONS
Jafarova S.H. Guliyeva R.T.	*Biyofizik Enstitüsü NAS Azerbaycan*	THE EFFECT OF HEAVY METALS ON ENZYME SYSTEMS THAT ENSURE THE PRODUCTIVITY OF AGRICULTURAL CROPS
Fatma Kazimova Gulcahan Hadjieva Tamasha Ibrahimova	*ANAS Fizik Enstitüsü*	TEMPERATURE EFFECT ON THE PHOTOLUMINESCENCEINTENSITY IN EuGa 2 S 4 AND EuGa 2 S 4 :Er 3+
K.R.Qəhrəmanova P.Ş.Məmmədova A.E.Almənmədova G.A.Məmmədova	*AMEA akademik Ə.Quliyev adına Aşqarlar Kimyası İnstitutu*	PURIFICATION OF SEAWATER FROM PETROLEUM CARBONS WITH THEPARTICIPATION OF MICROORGANISMS AND ADSORBENTS
Konul ABDULLAYEVA	*Azerbaijan State University*	ETYMOLOGY OF AZERBAIJANI OYKONYMS
Aygün Almənmədova Könül Qəhrəmanova Minaxanım Musayeva	*AMEA Aşqarlar Kimyası İnstitutu*	THE INFLUENCE OF THE ENVIRONMENT ON THE DEVELOPMENT OF MICROORGANISMS IN PETROLEUM PRODUCTS

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HEALTH SCIENCES

HEAD OF SESSION: Prof.Dr. Malahat Sultanova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Garibova K.A.	*Azerbaijan Medical University*	IMPACT OF HOTLINE SYSTEM ON GLYCOHEMOGLOBIN VALUEIN PATIENTS WITH TYPE 2 DIABETES, WHICH IS ACCOMPANIED BY ARTERIAL HYPERTENSION
Vatankha Suzan Aliyev Elnur Isayeva Semra	*National Center of Oncology*	RADIOLOGY VISUALIZATION OF GIANT CELL TUMOR AFTER RADIOTHERAPY
N.F.Muradov F.J. Hasanov K.N.Namazova A.A.Aslanov F.S.Janiyev G.A.Karimov R.I.Guliyev	*Acad'ın adını taşıyan Cerrahi Bilim Merkezi*	ROLE OF ANESTHESIOLOGISTS - REANIMATORS IN PROVIDING MEDICAL CARE TO WOUNDED IN THE FRONT - LİNE HOSPITAL.
Askerov N.M. Quliyeva N.H. Kerimova S.R Nasirli A.A.	*National Center of Oncology of the Ministry*	ASTHENIC SYNDROME AS AN INDICATOR OF THE QUALITY OF LIFE OF CANCER PATIENTS
Damla Nur PARILTI Süheyla Pınar ÇELİK Leyla AÇIK Mehmet Muhittin YALÇIN İlhan YETKİN Eldeniz YUNUSOV	*Gazi Universitesi*	EVALUATION OF rs61330082 AND rs2058539 SNPs IN NAMPT GENE FOR TYPE 2 DIABETES PATIENTS
Sevda Katibli Leyla Mehdizada	*Azerbaijan Medical University*	STUDY OF DEPRESSION, ANXIETY AND STRESS TOLARANCE IN CHRONIC GYNECOLOGICAL PATIENTS
Shalala Aliyeva Yegana Jafarova	*National Oncology Center*	EPIDEMIOLOGYCAL CHARACTERISTICS OF CHILDHOOD CANCER IN SUMGAYIT CITY
Adil Geybulla Adalat Rustam	*Azerbaijan Medical Universitesi*	THE RISK MODELS OF EARLY POSTOPERATIVE COMPLICATIONS IN ESOPHAGOPLASTY FOR CANCER

08.11.2021 Hall-5, Session-3	Baku Time 17^{00} : 19^{30}	Ankara Time 16^{00} : 18^{30}	ID: 854 8243 4224 Password: 020202

HEALTH SCIENCES

HEAD OF SESSION: Assoc. Prof.Dr. Özlem ÇİNAR ÖZDEMİR; Prof. Dr. Arif Mehdiyev

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Özlem ÇİNAR ÖZDEMİR Kübra ÖZONAY	*Izmir Democracy University*	EXAMINATION OF ANXIETY LEVELS ACCORDING TO COPD STAGES
Arif Mir Jalal oglu Pashayev Garay Chingiz oglu Garaybayli Arif Mammad oglu Mammadov Agil Khosrov oglu Aliyev Aygun Mirdamat gizi Jafarova	*Azerbaijan National Aviation Academy* *Azerbaijan Medical University*	THE HUMAN FACTOR IN AVIATION
Shahla Guliyeva Arif Mekhtiev	*Nakhchivan State University* *Academician Abdulla Garayev Institute of Physiology of ANAS*	CHANGES OF DIHYDROPYRIMIDINASE-RELATED PROTEIN 2 IN THE SALIVAAND ITS NATURAL AUTOANTIBODIES IN THE SERUM OF HUMANS INANXIETY
Nargiz Bayramova Nargiz Sultanova	*AMEA Molekulyar Biologiya və Biotexnologiyalar İnstitutu*	STUDY OF THE LEVEL OF SECONDARY METABOLITES INDUCED BY GLRAV-3 VIRUS IN GRAPE LEAVES
Maya Sultanli	*Institute of Physiology named after academician Abdulla Qarayev,Azerbaijan National Academy of Sciences*	ULTRA-STRUCTURAL MODIFICATIONS of GLIA- CAPILLARY CONTACTS IN THE ORBITOFRONTAL CORTEX OF THE WHITE LABORATORY RATS IN THE BACKGROUND OF FOOD PROTEIN DEFICIENCY AFTER SHARP VOICEIRRITATION
Mouad Bellahkim Ahmed Ouezgan Youssef Benbouras Aziz Maziri El Hassan Mallil Jamal Echaabi	*Kazablanka Üniversity*	EXPERIMENTAL EFFECT OF STACKING SEQUENCES AND SUPPORT SPAN ON DELAMINATION DAMAGE OF GRAPHITE/EPOXY WOVEN LAMINATE UNDER A THREE-POINT BENDING TEST

08.11.2021 Hall-6, Session-3	Baku Time 17^{00} : 19^{30}	Ankara Time 16^{00} : 18^{30}	ID: 854 8243 4224 Password: 020202

AGRICULTURAL SCIENCES

HEAD OF SESSION: Prof. Dr. Panah Muradov; Aydan Zeynalova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Z.P. Mustafayeva	*Genetic Resources Institute of ANAS*	STUDY OF SOME INTRODUCED VARIETIES OF POMEGRANATE IN AZERBAIJAN
Rakida Amina Marfat	*ANAS Institute of Genetic Resources*	ASSESSMENT OF VARIABILITY IN MORPHOLOGICAL AND POMOLOGICAL CHARACTERS OF APRICOT GERMPLASM OF NAKHCHIVAN, AZERBAIJAN
Nilufar Mubarız Safarova Javanshir Isa Isayev	*Azerbaijan Medical University*	MICROSCOPIC STUDY OF THE PLANT CAMPANULA SAXIFRAGA
K.V. Asadova	*Genetic Resources Institute of ANAS*	FORAGE PLANTS OF KARABAKH
Abdiyeva R.T. Ibrahimova A.G. Asadova K.K.	*Institute of Botany, Azerbaijan National Academy of Sciences*	MODERN APPROACHES TO THE STUDY OF THE ALIEN PLANTS INAZERBAIJAN
Safarova Parvin Etibar	*Moleküler Biyoloji ve Biyoteknoloji Enstitüsü, ANAS*	EFFECT OF PH ON DELAYED EMISSION OF CHLOROPHYLL IN PHOTOSYSTEM II
E.N. Novruzov L.A. Mustafaeva A.M. Zeynalova A.M. Musayeva R.M. Akhundova	*AMEA Botanika İnstitutu*	TAXONOMIC SPECTRUM, BIOECOLOGICAL CHARACTERISTICS AND PROSPECTS FOR THE USE OF LEAFY STEM VEGETABLE PLANTS OF NAGORNO-KARABAKH
Panah Z. Muradov Konul F. Bakshaliyeva	*ANAS Mikrobiyoloji Enstitüsü*	PRELIMINARY MYCOLOGICAL ANALYSIS OF THE LANDS OF THE LIBERATED CITY OF SHUSHA AND LACHIN CORRIDOR OF AZERBAIJAN
Maharram Babayev Naila Orujova Gunel Asgarova	*Institute of Soil Science and Agrochemistry of ANAS*	RATIONALITY OF THE APPLICATION OF CROP ROTATION SCHEMES IN FERTILITY RESTORATION OF THE SOILS REMAINED UNDER FLOOD WATER
Isgandarova Tunzala Hasan gizi	*Ganja State Universitesi*	PROSPECTS OF PRODUCTION OF ORGANIC AGRICULTURAL PRODUCT IN OUR REPUBLIC
Aliyev Suliddin Mammadova Aytan	*Institute of soil Science and Agrochemistry, Azerbaijan National Academy of Sciences*	INFLUENCE OF THE COMPOSITION OF RIVER WATER ON SOILFORMING PROCESS (AS AN EXAMPLE OF THE BILNA RIVER)

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NATURAL SCIENCES

HEAD OF SESSION: Dr. Nuri Movsumova, Dr. Nijat Hasanov

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Gasimova Gultakin Gasim	*Gence Devlet Üniversitesi*	THE INVESTIGATION OF PLANT SOURCED SUBSTANCES AND THECREATION PERSPECTIVES OF NEW PHYTO PREPARATIONS BASED ON THEIR RESEARCH ACTIVITIES
Aladdin Gadimov Sevda Tahirli Sadagat Rasulova	*ANAS Botanik Enstitüsü* *Bakü Devlet Üniversitesi* *ANAS Botanik Enstitüsü*	DETERMINATION OF NITRATREDUCTASE ACTIVITY OF COW PEAS PLANT WITH THE PARTICIPATION OF TRICHODERMA LONGIBRACHIATUM IN NaCl SALT
S.S.Gahramanov	*ANAS Dendroloji Enstitüsü*	MODERN PHYTOSANITARY CONDITION OF ABSHERON DENDROFLORA.
Ramiz Ələkbərov Tofiq Sadiqov Mehriban Qafarova Şənay Albalıyeva Ləman Mustafayeva Günay Süleymanova	*Azerbaycan Milli İlimler Akademisi*	BIOMORPHOLOGICAL CHARACTERISTICS, PHOTOCHEMICAL COMPOSITION AND MEDICAL IMPORTANCE OF THE HYPERICUM PERFORATUM L. SPECIES
Elnara Salahova	*ANAS Dendroloji Enstitüsü*	BIOLOGICAL CHARACTERISTICS AND APPLICATION OF BERBERIS NUMMULARIA BUNGE
Nuri V.Movsumova	*ANAS Botanik Enstitüsü*	ETHNOBOTANICAL CHARACTERISTICS AND FEED QUALITY INDICATORS OF FOOD PLANTS IN VETERINARY MEDICINE
Sayyara Ibadullayeva Sona Ibrahimli	*ANAS Botanik Enstitüsü* *Azerbaycan Devlet Tarım Üniversitesi*	ASSESSMENT OF GLYCYRRHIZA URALENSIS FISCH EX DC POPULATIONS IN LOWLAND KARABAKH
Gülnarə Ş.Şirəliyeva Nuri V.Movsumova Samirə F.Xudaverdiyeva Səyyarə C.Ibadullayeva	*ANAS Botanik Enstitüsü*	ETHNOBOTANICAL CHARACTERISTICS OF POLYGONACEAE JUSS FAMILYIN THE LESSER CAUCASUS (TARTAR, BARDA) TERRITORY OF AZERBAIJAN
S.A.Zeynalova S.C. Mustafayeva S.O.Aghayeva	*ANAS Botanik Enstitüsü*	ESSENTIAL OIL-BEARING PLANTS OF THE FAMILIES ASTERACEAE BERCHT. ET J. PRESL, APIACEAE LINDL. AND LAMIACEAE MARTINOV OF SOUTHERN AND CENTRAL PARTS OF LITTLE CAUCASUS

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NATURAL SCIENCES

HEAD OF SESSION: Dr. Ruhangiz Mammadova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Naiba Mehdiyeva Nigar Mursal	*ANAS Botanik Enstitüsü*	SCIENTIFIC BASIS OF MEASURES FOR THE RESTORATION OF KARABAKH'S VEGETATION
Sh.N. MIRZAYEVA	*ANAS Botanik Enstitüsü*	HALOPHYTE PLANTS OF THE ABSHERON PENINSULA
S.Q. Guliyeva G.T. Mammadova	*ANAS Merkez Botanik Bahçesi*	HISTORY OF STUDY OF SOME TYPES OF ALCEA L
Ruhangiz Mammadova Sevinc Mammadova Gulshen Abdulaliyeva	*ANAS Genetik Kaynaklar Enstitüsü*	IDENTIFICATION OF ADAPTIVE INDUSTRIAL CROPS IN KARABAKH EXPERIMENTAL STATION
Mahira Mammedova Aytan Aliyeva	*Moleküler Biyoloji ve Biyoteknoloji Enstitüsü ANAS*	GENOTYPIC VARIABILITY OF WHEAT DURING SCREENING OF ITS RESISTANCE TO HIGH TEMPERATURES
Nurhan BİNGÖL Serap CANLI	*Ankara Üniversitesi*	THE EFFECT OF LEARNING NURSING INFORMATICS ON PATIENT CARE
Serap CANLI Nurhan BİNGÖL	*Ankara Üniversitesi*	WEARABLE TECHNOLOGIES FOR THE ELDERLY
S.R.Hasanov G.A.Huseynzade Ch.T.Namazova A.A.Isgenderova B.Sh. Moghanloo	*Azerbaycan Milli İlimler Akademisi*	PROSPECTS FOR THE DEVELOPMENT OF VEGETABLE GROWING IN THE LIBERATED TERRITORIES
T.I.Allahverdiyev	*Moleküler Biyoloji ve Biyoteknoloji Enstitüsü, ANAS*	IMPROVEMENT OF THE WHEAT TOLERANCE TO DROUGHT AND HEAT
Asadova Almas	*Azerbaycan Ulusal Bilimler Akademisi*	PROBLEMS AND PROSPECTS OF THE SELECTION OF LEGUMES IN KARABAKH

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HEALTH SCIENCES

HEAD OF SESSION: Prof. Dr. Ulduz Hashimova

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Sultanova G.G. Kasumov Kh.M.	*Azerbaycan Milli İlimler Akademisi*	BIOLOGICAL ACTIVITY OF PA AND THEIR DERIVATIVES ON CLONOGENIC CELL CULTURES, ASCITE CELLS AND RED BLOOD CELLS
Ulduz Hashimova Azad Ahmadov Khatira Safikhanova Aliya Gaysina Madina Abdullayeva Narmin Mammadova	*Azerbaycan Milli İlimler Akademisi*	ANALYSIS OF HEMATOLOGICAL PARAMETERS OF COVID-19 POSITIVE PATIENTS
Ulduz Hashimova Aghahasan Rasulov Aliya Gaisina Larisa Boytsova Khatira Safikhanova Narmin Mammadova	*Institute of Physiology, Azerbaijan National Academy of Sciences*	CHANGES IN HEMATOLOGICAL PARAMETERS AND INFLAMMATORY BIOMARKERS IN COVID-19 POSITIVE PATIENTS WITH MENTAL DISORDER
A.T.Amiraslanov A.A.Amiraslanov E.E.İbragimov S.V.Abdiyeva	*Azerbaijan Medical Universitesi*	CLINICAL AND MORPHOLOGICAL ASPECTS OF MALIGNANT SOFT TISSUE TUMORS
Namazova K Hasanov F Muradov N Aslanov A Kravchenko T Hasanov H Nazirov R Abbasova M Guliyev R	*Akademisyen M. Topçubaşov'un adını taşıyan Bilimsel Cerrahi Merkezi Mediclub Hastanesi, Bakü, Azerbaycan*	SELECTION OF ADEQUATE VENTILATION METHOD IN THORACOSCOPIC OPERATIONS OF THE ESOPHAGUS
Fərxadzadə K.B. Vətənxa S.S.	*Milli Onkologiya Mərkəzi*	SÜD VƏZLƏRININ PALPASIYA OLUNMAYAN BƏD XASSƏLI TÖRƏMƏLIRININERKƏN DIAQNOSTIKASINDA RENTGEN MAMMOQRAFIYANIN IMKANLARI
Mammadova N.A	*Azerbaycan Cumhuriyeti Ulusal Onkoloji Merkezi*	PRES SYNDROME AS A COMPLICATION OF DRUG THERAPY IN A BOY WITH MEDULLOBLASTOMA. CLINICAL CASE
F.Ə.Mərdanlı Ş.Ş.Əliyeva Y.R.Cəfərova	*Milli Onkologiya Mərkəzi*	SUMQAYIT ŞƏHƏRİNDƏ UŞAQLAR ARASINDA BƏDXASSƏLİ TÖRƏMƏLƏRİN EPİDEMİOLOGİYASI
H.N.Həsənova	*Milli Onkologiya Mərkəzi*	QİDA BORUSUNUN XƏRÇƏNGİ XƏSTƏLƏRİNDƏ ENDOSKOPİKSTENTLƏŞMƏSİZAMANI BAŞ VERƏN AĞIRLAŞMALAR

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NATURAL SCIENCES

HEAD OF SESSION: Prof.Dr. Rovshan Khalilov, Prof.Dr. Aziz Eftekhari

AUTHOR(S)	ORGANISATION	TOPIC TITLE
Zaman Mammadov	*Institute of Soil Science and Agrochemistry of ANAS*	LANDS OF EASTERN ZANGAZUR ECONOMIC REGION AND DİGİTAL LAND MAP GENERATION (GİS BASED)
Elchin Baghirov Almas Ismaylova	*Azerbaijan National Academy of Sciences*	INVESTIGATION OF GRAVITATIONAL PARAMETERS OF PLOTS , STRUCTURE OF GROUND AND TIME CHANGES IN UPPER LAYERS OF EARTH'S CORE BY GRAVIMETRIC AND GEODESIC METHODS ON LIBERATED TERRITORIES
Gasimzade Tubukhanim	*ANAS*	NEW METHOD OF ECO-GEOBOTANICAL ASSESSMENT OF SOIL- VEGETATION COVER
Murad MUKHTAROV Oğuz AKPOLAT Huseyn OSMAN Mehmet UĞURLU	*Muğla Sıtkı Koçman Üniversitesi*	ANALYSIS OF WASTE WATER CHARACTERISTICS BY DATA MAINING
Rovshan Khalilov Soodabeh Davaran Taras Kavetskyy Aziz Eftekhari	*Bakü Devlet Üniversitesi* *Tebriz Tıp Bilimleri Üniversitesi* *Drohobych Ivan Franko Devlet Pedagoji Üniversitesi* *Tebriz Tıp Bilimleri Üniversitesi*	ENGINEERED MAGNETIC NANOPARTICLES FOR ENHANCED VACCINE DELIVERY
Aziz Eftekhari Rovshan Khalilov	Health Innovation Acceleration Centre, Tabriz University of Medical Sciences, Tabriz, Iran Baku State University	LAB-ON-A-CHIP AND INTERNET OF THINGS TECHNOLOGIES AGAINST COVID-19 CHALLENGES
Rafig Gasimov	*Azerbaycan Milli Akademisi*	PROSPECTS OF BIODIVERSITY RESEARCH IN WATER BASINS OF KARABAKH REGION
Alovsat Guliyev	*ANAS Toprak Bilimi ve Agrokimya Enstitüsü*	RESTORATION OF UNIQUE WATER SOURCES AND KAHRIZ CANALS IN THE LIBERATED TERRITORIES OFAGHDAM REGION.
A.Y.HUSEYNOVA G.C.GASIMOVA	*ANAS Botanik Enstitüsü*	BIOECOLOGY OF SPECIES CENTAUREA L.
Ahmadova Sevda	*Ganja State University*	ECOLOGICAL STATUS OF SOME SPECIES OF FLORA IN THE TERRITORIES OF KARABAKH RELEASED FROM THE OCCUPATION
Anvar Goycha oglu Jalilov	*AMEA Zoologiya İnstitutu*	PHYSICS, CHEMISTRY, BIOLOGY, ENVIRONMENTAL SCIENCES

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NATURAL SCIENCES

HEAD OF SESSION: Prof. Salim Newaz Kazi

AUTHOR(S)	ORGANISATION	TOPIC TITLE
A.M. Maharramov S.H. Mukhtarova G.T.Suleymanova N.E.Ahmadova N.V.Gurbanova U.F.Asgarova N.G.Shikhaliyev Kh.A.Garazade	*Bakü Devlet Üniversitesi*	SYNTHESIS OF THE (E) / (Z) ISOMERS OF METHYL-2- (4- (DIMETHYLAMINO) - PHENYL) -2- (2- (P-SUBSTITUTED)HYDRAZONE)ACETATE
Yasmina Halabi Chaimae Nasri Hicham Harhar Abdelkbir Bellaouchou Mohamed Tabyaoui	*Laboratory of Materials, Nanotechnology, and Environment, Mohammed V University, Faculty*	PHOENIX DACTILYFERA L. SEED OIL : PHYSICOCHEMICAL PROPERTIES AND CHEMICAL COMPOSITION
Salim Newaz Kazi	*Malaya Üniversitesi*	INVESTIGATION OF DRAG REDUCTION IN SUSPENSION FLOW
Karolina Brudny Anna Koziol	*Cracow Üniversitesi*	POTENTIAL OF FUNGAL BIOCOMPOSITES IN THERMAL INSULATION APPLICATIONS: A REVIEW
Laman MUSAYEVA Hatice TÜRK DAĞI	*Selçuk Üniversitesi*	MICROORGANISMS ISOLATED FROM BLOOD CULTURES AND ANTIBIOTIC RESISTANCE RATES; OUR TWO-YEARS CAESAR SURVEILLANCE DATA
Anar T.Huseynov	*ANAS*	MICROBIOLOGICAL CONTROL OF WATER SUPPLY IN SHUSHA CITYAFTER OCCUPATION
Baghirova A.A. Kasumov Kh.M.	*Azerbaycan Milli İlimler Akademisi*	IMMUNOMODULATORY EFFECT OF THE MACROCYCLIC DRUGAMPHOTERICIN B

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HEALTH SCIENCES

HEAD OF SESSION: Prof.Dr. Asif Manafov; Elshad Askerov

AUTHOR(S)	ORGANISATION	TOPIC TITLE
TAHIR KARIMOV SEVINJ RAJABOVA LEYLA AHMADLI	*Azerbaycan Milli İlimler Akademisi*	THE BIRD FAUNA OF KARABAKH
Kuliyev Giyas Nagi Hasanova Leyla Vaqif	*Azerbaycan Ulusal Bilimler Akademisi*	FORMATION OF THERIOFAUNA OF THE KARABAKH TERRITORY
İpek ERDEM Aykut ZEREK Sibel ELMACIOĞLU CURA Mehmet YAMAN Mehmet Zeki Yılmaz DEVECİ Ömer KIRGIZ	*Hatay Mustafa Kemal Üniversitesi*	FIRST MOLECULAR DETECTION OF CYSTIC ECHINOCOCCOSIS DIAGNOSED INCIDENTALLY IN EXPLORATORY LAPAROTOMY OF A DOMESTIC CAT (FELIS CATUS) IN HATAY, TURKEY
Sumeyye SAİNKAPLAN Merve Hazal ÖZMEN Cemre IŞIK İrem ERGİN	*Ankara Üniversitesi*	SURGICAL CORRECTION OF PALPEBRAL CONJUNCTIVAL DERMOID AND DEEP CORNEAL ULCER TREATMENT IN A DOG
Agaeva E.M Zeynalova Sh.K Narimanov V.A	*Azerbaijan Medical University* *Azerbaycan Tarım Bakanlığı*	A RABIES VIRUS STRAIN ISOLATED FROM A DOG IN AZERBAIJAN:GENETIC, PHENOTYPIC AND PHYLOGENETIC CHARACTERISTICS
Iskenderov T.M.	*of the Azerbaijan National Academy of Sciences*	ON THE RESULTS OF EXPERIMENTAL RESEARCH TO IMPROVE SNAKE POISON PRODUCTION IN AZERBAIJAN

İÇİNDEKİLER

	MOTOR DRIVES USING AMPLITUDE AND ANGLE OF THE STATOR FLUX CONTROL	
Masma Shahbazova Nurullah Ciftci Ugur ARSLAN	SYPHILIS POSITIVITY IN A UNIVERSITY HOSPITAL	VOLUME-II
Tekin YEKEN	A TYPICAL TUMULUS STUDY USING GEOELECTRIC METHODS FOR ARCHAEOGEOPHYSICS	VOLUME-II
Namazova Kamala Hasanov Fuad Muradov Nizami Aslanov Azer Kravchenko Teymur Hasanov Hafiz Surg. Nazirov Rufat Alieva Aygun Guliev Rashad Abasova Machruch	SELECTION OF ADEQUATE VENTILATION METHOD IN THORACOSCOPIC OPERATIONS OF THE ESOPHAGUS	VOLUME-II
Rauf Lütfəli oğlu Sultanov Vüsalə Elxan qızı Hacıyeva	BİOLOGİYA VƏ COĞRAFİYA FƏNLƏRİNİN ƏLAQƏLİ TƏDRİSİ PROSESİNDƏ İŞİN TƏŞKİLİ	VOLUME-II
Zeynab Hajamova	THE SOCIO-PSYCHOLOGICAL ANALYSIS OF THE FEATURES OF SOCIAL PERCEPTION AND INTERACTION EFFECT WITH EMOTIONAL INTELLIGENCE IN PANDEMY CONDITIONS	VOLUME-II
Veliyeva G.V.	PREVENTIVE. IMMUNOMODULATORY THERAPY OF DACRYOCYSTITIS OF NEWBORNS.	VOLUME-II
Bengü TÜRKYILMAZ ÜNAL Hüseyin TÜRKER Münir ÖZTÜRK	EX-SITU CONSERVATION OF ENDEMIC SALVIA SPECIES BY MICROPROPAGATION TECHNIQUE	VOLUME-II
Anara Babayeva Emine Sonay Elgin Esra Dibek Merve Sezer Kürkçü Bekir Çöl	INVESTIGATION OF ANTIMICROBIAL EFFECTS OF THE EXTRACTS OBTAINED FROM PROPOLIS SAMPLES COLLECTED FROM RIZE AND ARTVIN REGIONS IN TURKEY	VOLUME-II
Ünsal AYBEK Lütfü NAMLI	THE EFFECTS OF DETERMINED DECISION VARIABLES ON SOLID OXIDE FUEL CELL PERFORMANCE AND EXERGETIC OPTIMIZATION BY GENETIC ALGORITHM METHOD	VOLUME-II
Vəliyeva Məhbubə Nəbi qızı	COVİD-19 INFEKSIYASININ MÜALICƏSINDƏ ELMI-ƏSASLI ÖYRƏNILƏN BIYAN PREPARATLARININ TƏTBIQI	VOLUME-II
Sayiter YILDIZ Can Bülent KARAKUŞ	LIFE CYCLE ASSESSMENT AND APPLICATION AREAS	VOLUME-II
Ramiz Ələkbərov Tofiq Sadiqov Meriban Qafarova Kəmalə Sadıqova Şənay Albalıyeva Günay Süleymanova	BIOMORPHOLOGICAL CHARACTERISTICS, PHOTOCHEMICAL COMPOSITION AND MEDICAL IMPORTANCE OF THE HYPERICUM PERFORATUM L. SPECIES	VOLUME-II
Zehra YÜCEDAĞ	EXISTENCE OF SOLUTIONS FOR NONLOCAL PROBLEMS WITH VARIABLE EXPONENT	VOLUME-II
Zehra YÜCEDAĞ	EXISTENCE NONTRIVIAL WEAK SOLUTIONS FOR A CLASS OF STEKLOV BOUNDARY VALUE	VOLUME-II

FORAGE PLANTS OF KARABAKH

K. V. Asadova
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Keywords: Karabakh, forage plants, research

The Karabakh region is known not only in the Caucasus, but also around the world for its mysterious nature and rich plant resources.

It is a matter of great pride to study the plant resources of Karabakh, which was liberated during the 44-day Patriotic War, starting from September 27, 2020.

During the research, were examined herbarium materials collected before the occupation and stored in the Herbarium Fund of the Institute of Botany of ANAS, and extensive literature.

The forage plants spread in the liberated regions of Aran Karabakh are represented by 2 family, 27 genera and 60 species.

11 most promising species of cereal plants covering 6 genera of the Cereal family were studied. The most common are wheat (*Triticum*), rye (*Secale*), millet (*Panicum*), barley (*Hordeum*).

Forage grasses belong to 21 species of 9 genera of the Legume family. The most common representatives are the species *Elytrigia*, *Festuca*, *Lolium* and *Poa*

The group of legumes includes 21 species belonging to 10 genera of the legume family. These are important plants for high forage (*Astragalus*, *Lotus*), medicinal (*Glycyrrhiza*, *Melilotus*).

Cereal legumes include 7 perspective species belonging to 2 genera of the legume family. Household lentils (*Lens*), blue peas (*Pisum*), highly nutritious vetch (*Vicia*) are the most common representatives of this group.

As a result of phytocenological analysis, it was clarified that 23 species of forage plants are distributed in forests and shrubs, 13 species in meadows and 21 species on slopes. Note that the same species can be distributed in several phytocenological groups.

As a result of research conducted in the herbarium funds, it was determined that most of the regions liberated from occupation by fodder plants are found in Khojavend (19 species), Fizuli (13 species), Jabrayil (12 species) and Aghdam (10 species).

During the analysis of life forms, it was determined that more grass-fodder plants are found in the area (95%).

According to the results of hypsometric analysis, most plants are distributed in lowland areas (34%).

TAXONOMIC SPECTRUM, BIOECOLOGICAL CHARACTERISTICS AND PROSPECTS FOR THE USE OF LEAFY STEM VEGETABLE PLANTS OF NAGORNO-KARABAKH

E.N. Novruzov

L.A. Mustafaeva

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Among plant resources, a special place in the human diet is occupied by vegetable food plants, which are characterized by valuable nutritional and taste qualities. In addition, wild vegetable plants can be a good help in supplying the population with valuable, environmentally friendly and rich in biologically active and nutritious food products and serve as raw materials for the food industry. In this regard, research has been carried out to study and analyze the wild flora of Nagorno-Karabakh. As a result of the research, 132 species of leafy vegetable plants were identified, belonging to 87 genera and 29 families. Of these, one species belongs to higher spore plants, 14 to monocotyledonous and 116 to dicotyledonous plants. Of the identified families, they are especially rich in leafy stem vegetable species of the family *Polygonaceae* (12 species), *Umbelliferae* (17 species), *Labiatae* (18 species) and *Compositae* (19 species), which in turn make up 15.8%, 22.5%, 23, 8% and 25% of the total, respectively. They are followed by the families *Brassicaceae, Alliac*eae and *Caryophyllaceae*. Among the identified vegetable species, the species *Sinapsis arvensis* L., *Polygonum aviculare* L., *Malva silvestris* L., *Stellaria m*edia L., *Chenopodium album* L., and others are of interest directly as a vegetable, while the species *Carum carvi* L., *Foelniculum vulgare* Mill., *Daucus carota* L., *Distamnus caucasica* (Fish.) A. Grossh., *Mentha longifolia* L. and others as a seasoning for food. The results of the research indicate the prospect of their introduction in order to introduce them into the diet of the population.

Keywords: vegetable plants, leaves, stems, prospects of use

BASIC PRINCIPLES OF AGROECOLOGICAL ZONING IN THE LIBERATED TERRITORIES OF AZERBAIJAN

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Keywords: agroecological zoning, soil cover, relief, climate, assessment

Agroecological zoning of the territory of Azerbaijan on the basis of soil cover appraisal is carried out in close connection with the general scheme of natural and agricultural zoning of the country according to the following system of taxonomic units: country, agroecological class, agroecological area, agroecological region, agroecological zone, agroecological subzone, agroecological grouping. These subdivisions are complex territorial production units. They differ in a number of natural and economic characteristics. However, taking into account the relationship between nature and economy, there is no need to use the entire set of features when selecting subdivisions. It is enough to take into account only the most characteristic ones. Below are the definitions of the concepts of taxonomic units of the zoning system and the most characteristic features used to distinguish the subdivisions of the territory.

Country - Azerbaijan.

Agroecological class is a latitudinal or vertically extending territory characterized by the predominance of the main zonal soil type. Within Azerbaijan, 2 classes are distinguished: mountainous territories, which are included in the belt with the entire system of vertical zonation from foundation to cold (depending on the height of the terrain), and flat, characterized by a certain amount of total solar heat input, i.e. the plain is defined according to the general scheme of horizontal zonation.

An agroecological area is a part of a class (mountainous and lowland), separated by a large orographic element - vertical or horizontal zoning. When identifying agroclimatic regions, in addition to the features of the distribution of heat, moisture and other indicators on the territory of the republic, the physical and geographical differences of the regions are taken into account in a larger plan.

Agroecological regions - usually cover the territory of several administrative regions. The main features of the area are the types of specialization and methods of farming, determined by local agro-ecological and agro-economic conditions.

Agroecological zone - a part of the region, characterized by a certain complex of agroecological and agroeconomic conditions (soil cover structures - its distribution over the relief, features of the meso- and microclimate, proximity to large settlements, etc.), which determine regional differences in agricultural production in terms of the composition of cultivated crops , narrower specialization, concentration of production.

Agroecological subzone is a part of an agroecological region in which certain varieties of agrocenoses, forage and forest lands are cultivated, i.e. narrow specialization of agricultural production for individual plant varieties.

Agroecological grouping of soils is a part of a zone or subzone, a combination of soil taxonomic units according to close scores, which make it possible to cultivate agrocenoses, forage and forest lands. Agroecological soil grouping is subdivided into two types: complex and specialized.

Comprehensive agroecological grouping of soils is a combination of soil taxonomic units according to complex properties and characteristics that make it possible to cultivate agrocenoses, forage and forest lands.

A specialized agroecological grouping of soils is a combination of soil taxonomic units according to some properties and characteristics of soils, which makes it possible to cultivate certain agrocenoses, forage and forest lands. This grouping of soils is carried out to eliminate any negative properties and signs of soils, for example, salinity, swampiness, etc.

The ultimate goal of agroecological zoning is to identify the boundaries of these regions, i.e. transfer them to the map and provide the necessary characteristics. From this point of view, zoning was carried out on the basis of the cartogram of the soil bonitet of the republic. Thus, agroecological zoning, their appraisal by soil properties, taking into account climate and relief, can serve as a fairly objective indicator when regulating soil fertility in individual regions.

STUDY OF THE BIODIVERSITY OF CHERRY PLANTS GROWN IN OUR COUNTRY

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Cherry (*Prunus avium* L.) is diploid, with eight pairs of chromosomes (2n=16). It has been considered as an important fruit crop with several properties contributed to health. Due to the fact that there are not so many areas where cherries can be cultivated economically in the world, long-term storage, production of durable, high-quality cherry sorts and forms is implemented in limited regions of some countries. There are large areas in our country where the ecological conditions are suitable for growing cherries. In our country, which has a great ecological potential in the cultivation of cherries, it hasbeen observed that production has increased rapidly in recent years.

Such as all over the world, our country has been working for many years to identify the gene reserves of fruit varieties and create a collection to select individuals with excellent characteristics.

It is important to identify and protect the plant's genetic resources. The rapid development of biotechnology in recent years has made a direct and significant contribution to its use for such purposes as the protection, production, renewal, characterization, cultivation and development of the diversity of genetic resources. Taking into account the methods used for this purpose, it can be observed that they are based on DNA whose genetic structure does not varied.

The study of cherry samples with molecular markers allows to distinguish morphologically similar samples and to estimate the degree of genetic similarity between genotypes.

Keywords: diversity, cherry, sorts, plant

ENGINEERED MAGNETIC NANOPARTICLES FOR ENHANCED VACCINE DELIVERY

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Abstract

Unlike conventional vaccines that employ recombinant viruses, nucleic acid vaccines (genetic vaccines) consist only of DNA (as plasmids) or RNA (as mRNA), which is taken up by cells and stimulate an immune response against it. The mRNA vaccine which has been developed against covid-19, is an important type of genetic vaccines. The main challenge that limits the clinical application of genetic vaccines is choosing a correct and appropriate delivery system. Nanotechnology-based vaccine delivery systems have been developed in the recent years. Among the various nano-scale materials, inorganic nanoparticles have attracted significant interest as nanovectors for vaccine delivery due to their ease of functionalization, biocompatibility, and low toxicity. Superparamagnetic iron oxide NPs (SPIONs) which have been approved by US-FDA for treatment for a variety of diseases, are promising inorganic nanoparticles for gene and vaccine delivery. SPION-based DNA vaccine delivery systems have been investigated for DNA vaccine delivery in the presence of an external magnetic field focused around the injection site in order to achieve controlled and sustained exposure to the vaccine in the target area. External magnetic field can increase sedimentation rate, particle internalization and gene expression. We have developed a variety of positively-charged, surface modified SPIONs for delivery of bioactive agents including therapeutics, genes and vaccines as well as tissue engineering and regenerative medicine. The positively charged surface SPIONs have been prepared by conjugation or coating of nanoparticles with cationic biocompatible polymers. Chitosan-modified PLGA, amine-terminated poly(ethylene oxide) (PEG-NH_2) and poly(ε-caprolactone) (PCL-NH_2), positively charged functionalized silica nanoparticles and stimuli-responsive polymers have been synthesized and used for functionalization of SPIONs with

positive surface charge. Physicochemical and morphological properties of these engineered magnetic nanoparticles have been evaluated by different characterization techniques. Their biocompatibility such as cytotoxicity and hemocompatibility has been evaluated *in-vitro* and *in-vivo*. The ability of these nanoparticles to interact with negatively charged bioactive materials including drugs, cells, nucleic acids and protecting them from environmental conditions make them promising candidate for advanced therapies such as targeted chemotherapy, cell therapy, regenerative medicine therapy, gene and vaccine therapy

.

Keywords: vaccine, nanoparticle, nanotechnology, adjuvant, immune cell targeting, peptide vaccine, DNA vaccine, Show Figures

MODERN PRINCIPES OF DIAGNOSIS AND SURGICAL TREATMENT OF ISCHEMIC MITRAL INSUFFICIENCY

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Introduction

Relevance of the safety and efficacy of surgical treatment of patients with ischemic heart disease , complicated by the development of heart failure due to post-infarction remodeling of the left ventricular cavity (LV) and ischemic heart failure (I M H), remains one of the most relevant in modern cardiac surgery.

The purpose of the study is to evaluate and analyze the results of surgical treatment of patients with ischemic mitral insufficiency.

Material and methods. The results of the examination and surgical treatment of 132 patients with ischemic mitral insufficiency are analyzed. In the operative period, in order to identify the degree of mitral insufficiency and the valvular apparatus, an echocardiography was performed, where the diameter of the fibrous ring, the interpapillary distance, the annulopapillary distance, the area of the cusp tension, and the depth of the coaptation of the valves were determined.

Results. A preoperative examination proved the presence of mitral valve insufficiency with regurgitation of varying degrees. 30 patients underwent myocardial revascularization, 102 patients underwent myocardial revascularization + various options for correction of ischemic mitral insufficiency .After the operation, a significant improvement in the spatial-geometric correlation of the LV and mitral valve by reducing the tension forces acting on the valves and in the group of patients undergoing myocardial revascularization + various options for the correction of ischemic mitral insufficiency as the elimination of regurgitation.

C**onclusion** .In patients with ischemic heart disease after echocardiographic studies, having determined the degree of mitral insufficiency with its moderate and severe degree, it is necessary to have a surgical correction of the mitral valve in its apparatus; the use of myocardial revascularization + various options for the correction of ischemic mitral insufficiency gives more tantalizing results than isolated myocardial revascularization

Key words: ischemic mitral insufficiency; isolated myocardial revascularization, mitral valve reconstruction.

BOTANICAL AND GEOGRAPHICAL ANALYSIS OF MESOTHERMIC RELICTS OF TURGAI FLORA OF AZERBAIJAN

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Keywords: Turqai, Relict, Poltavian flora, Turgai flora, Oligocene III period.

Formation of the modern floristic plant species originates in the foreground of Cenozoic.The warm and humid climate of the Paleocene and Eoceny epochs of the III period of the Cenozoic era allowed the Poltav flora, ie the evergreen plants to gain an advantage.According to its taxonomic composition, the Poltav flora consisting mainly of evergreen plants, which resembles the tropical flora of South Asia not having any grass species, dominated the Oligocene epoch.In these favorable conditions for conifers, the range of these plants has expanded from Arctic to Antarctica.Since the beginning of the Oligocene epoch of the third period, broad leaved Turgai flora began to replace the evergreen Poltava flora.This process started from Europe and expanded to the north, including the Mediterranean Sea and the Caucasus.Turqai floras *Faqus* L., *Ulmus* L., *Betula* L., *Quercus* L., *Juglans* L., *Pterocarya* Runth., *Acer* L., *Vitis* L., *Zelkova* Spchand other broad leaved genera dominated in Azerbaijan.In the middle of the Oligocene, the Turgai flora began spreading from Asia to Japan, from Sakhalin to Kazakhstan, Ural, in Europe till to Scotland and England starting to supersede the area of the coniferous.

In the East Caucasus, including in Azerbaijan widespread Turgai flora started to shrink due to icing in the end of the III and begining from IV period .In modern times, Turgai flora remaining relicts are more common inHirkan (Azerbaijan), in Colchis (Georgia), and partially in the forests surrounding the Southern hills of the Greater Caucasus.Hirkan is generally regarded as a former mesophyll relict island of the III Period flora.

Mesothermic plants of Turgai flora in Azerbaijan are found combining 17 families and 28 genera in 38 species of trees and shrubs.

20 of these are rare and endemic plants. The Turqai relicts were even more common in Hirkan and in the forests surrounding the Southern slopes of the Greater Caucasus.

RATIONALITY OF THE APPLICATION OF CROP ROTATION SCHEMES IN FERTILITY RESTORATION OF THE SOILS REMAINED UNDER FLOOD WATER

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Protection of soil fertility is an important problem in provision of the population's with food in terms of food security. The floods occurring as a result of the natural disasters affect the soil fertility.

An aim of the research is to work out measures system for fertility restoration of soils remained under the flood by considering of the zonal agrotechnics using the biohumus and organic- mineral fertilizer.

The research object is meadow- grey and alluvial- meadow soils remained under flood water five-field vegetable, fodder- technical crops are a rotation scheme: 1 and 2. Lucerne; 3.cotton; 4.grain; 5.vegetable.

The consequences of the applied sections indicate that the irrigated meadow- grey and alluvial- meadow soils remained under flood water have been irrigated for long years, the irrigation debris gather on the surface. Although the amount of humus along the profile changed downwards due to the burial of the top fertile layer of soil, a new increase was observed after the 80-90 cm layer.

The secondary salinization as a result of rising groundwater in irrigated meadow- grey and alluvial- meadow soils remained under flood water caused the salt amount increase in soil and it negatively affected the plant productivity. The cotton, grain and vegetable productivity was 7,5% while the salt quantity was 0,20- 0,50%. But it decreased 54,5% when saltness was 0,5- 1,0% and 24,7% and 1,0- 2,0%.

The organic- mineral bioactive fertilizer and biohumus were used to restore fertility of soils remained under flood water, to increase the cotton productivity, vegetable entering the crop rotation during the research. The productivity was accordingly 15- 20% and 10- 15% in comparison with control in the variants with organic-mineral bioactive fertilizers and biohumus.

So using the crop rotation schemes in fertility restoration of soils remained under flood water and application of organic fertilizer are rational means.

Key words: irrigated meadow- grey soils, irrigated alluvial- meadow soils, crop rotation scheme, biohumus, organic- mineral bioactive fertilize.

STUDY OF MORPHOLOGICAL POLYMORPHISM IN THE LEAVES OF CAUCASİAN OAK (*QUERCUS MACRANTHERA* SUBSP. *SYSPIRENCIS* (K.KOCH) MENITSKY)

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Morphological polymorphism of caucasian oak leaves has been studied. 6 morphological features of leaves were measured by CI-202 LESER AREA METER (USA). The intrapopulation variation of data were analyzed by ANOVA. The result of the variation analysis of leaf area (44.32 %), leaf perimeter (38.16 %) and leaf width (25.42 %) showed the highest variability from the studied morphological parameters. The weakest variation was calculated for leaf width (15.35%) and ratio (17.65%), the distribution was normal. The significant variability in the leaf traits reflects their plasticity, and it demonstrates their important roles in the adaptability of species to the environmental changes.

Key words: *Caucasian oak, ANOVA, morphological variation*

ŞƏRQ PALIDI (*QUERCUS MACRANTHERA* SUBSP. *SYSPİRENSİS* (K.KOCH) MENİTSKY) YARPAQLARINDA MORFOLOJİ POLİMORFİZMİN TƏDQİQİ.

Tədqiqat zamanı Göygöl Milli Parkından 20 şərq palıdı ağacından, hər ağacdan 10 yarpaq olmaqla 200 yarpaq nümunəsi toplanmışdır. Toplanmış yarpaqlarda populyasiyadaxili morfoloji polimorfizmi qiymətləndirmək üçün AMEA, Dendrologiya İnstitutunda CI-202 LESER AREA METER (ABŞ) avadanlığı vasitəsi ilə morfometrik ölçmə işləri aparılmışdır. Yarpaqlarda 6 morfoloji əlamətin (YU-yarpağın uzunluğu, YE-yarpağın eni, YS-yarpağın sahəsi, YP-yarpağın perimetri, R-yarpağın forma əmsalı (R=YU/YE) və F-faktor YE/YP) qiymətləri qeydə alınmış, rəqəmlər Excell kompüter proqramında işlənildikdən sonra ANOVA statistik kompüter proqramı vasitəsilə analiz edilmişdir. RCBD üsulu əsasında variasiya analizinin (ANOVA) nəticələri, əlamətlər üzrə variasiya əmsalının (CV) və ən az əhəmiyyətli fərqlilik (LSD-Least Significanct Difference) göstəricisinin qiymətləri analizin etibarlılığını göstərmişdir. Nəticədə məlum olmuşdur ki, tədqiq olunan morfoloji parametrlərindən YS, YP və YE ən yüksək variasiya müxtəlifliyi göstərmişdir. Bu əlamətlər (YS YP və YE) üzrə variasiya əmsalının qiyməti uyğun olaraq 44.32 %, 38.16 % və 25.42 %-ə bərabərdir, paylanma ortadır.Yarpağın YS əlamətinə görə maksimal, minimal, orta və median qiymətləri uyğun olaraq 82,79 sm^2, 53,44 sm^2, 78,03 sm^2, 68.32 sm^2 bərabərdir. YP əlamətinin maksimal qiyməti 160,65 sm, minimal qiyməti 140,3 sm, orta qiyməti 146,86 sm, median qiyməti isə 139.41 sm-dir. YE əlamətinin maksimal, minimal, orta və median qiymətləri isə müvafiq olaraq 7,06 sm; 9,07 sm; 8,13 sm-ə bərabərdir. Ən zəif variasiya müxtəlifliyi isə YU (15.35%) və N (17.65%) əlamətlərində hesablanmışdır, paylanma normaldır.

Yarpağın morfoloji əlamətlərindəki variasiya müxtəlifliyinin yüksək olması şərq palıdının dəyişən ətraf mühit faktorlarına qarşı adaptasiya qabiliyyətinin yüksək olmasını göstərir. Bu növün qorunub-saxlanılması və təbii seçmədə qalib gəlməsi üçün böyük əhəmiyyətə malikdir. Qafqaz endemi olan Şərq palıdının Kiçik Qafqazda-Qarabağda geniş yayılma arealı mövcud olmuşdur. Növün morfoloji və genetik polimorfizminin yüksək olmasını, əvvəlki yayılma areallarını nəzərə alaraq müharibədən sonrakı dövrdə floranın bərpası işlərində növdən uğurla istifadə etmək olar.

ASSESSMENT OF VARIABILITY IN MORPHOLOGICAL AND POMOLOGICAL CHARACTERS OF APRICOT GERMPLASM OF NAKHCHIVAN, AZERBAIJAN

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Apricot (*Prunus armeniaca* L.), belonging to the *Prunus* genus of the Rosaceae family, is an important stone fruit specie cultivated in the world. Apricot trees originated in China and Central Asia. Apricot ranks as the third most economically important stone fruit crop after peach and plum. Its germplasm resources in the world are extremely abundant. This plant has been cultivated in Azerbaijan for a long time, and its cultivation is expanding every year in various regions. Among the economic regions of Azerbaijan, Nakhchivan region covers 30% of apricot production. Total fresh apricot production of Azerbaijan in 2020 was 28977,4 metric tons. The purpose of this study was to characterize the Azerbaijan apricot germplasm that was collected in Nakhchivan. Nine (morphological, pomological) parametrs were studied in this germplasm, consisting of 44 apricot cultivars and forms. There was a high correlation between bud break season and blossom season. The Pearson correlation indices of blossom season with harvest season, fruit weight with fruit length and diameter were determined as r= 0,877, r = 0.894 and r = 0.868, respectively. PCA revealed that 100% of the total variance among cultivars/genotypes was explained by the first nine components. Ward cluster analysis divided apricot cultivars into three groups. Cluster I contains 21 cultivars/genotypes, cluster II contains 15 cultivars/genotypes and cluster III contains 8 cultivars/genotypes. This is the first report on genetic diversity analysis of apricot cultivars/genotypes from Nakhchivan region. This study would provide a sound and authentic basis for effective management and sustainable utilisation of apricot germplasm in future breeding programs in the region.

Key words: apricot, morphological, pomological

THE REGULARITY OF SOLUTIONS DEGENERATE NONLINEAR ELLIPTIC EQUATIONS.

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Key words: nonlinear equation, elliptic, degenerate, noisy system

Abstract

We is study the regularity of solutions of a degenerate non-divergence nonlinear elliptic equations.

Let we is consider in some ball $B_{2r} \subset R^n$ with radius $2r, r \geq 1$,at centr is 0,a solution $u(x)$ in $C(\overline{B}_{2r}) \cap W^{2,n}_{loc}(B_{2r})$ of nonlinear elliptic equation of non-divergence type

$$\sum_{i,j=1}^{n} a_{ij}(x,u(x),Du(x))D^2u(x) + f(x,u,Du(x)) = 0, \qquad (1)$$

for a.e. $x \in B_{2r}$ .Here $a_{ij} = a_{ji}$,i.d. $A(x,y,p)$ set of symmetric matrices of size $m \times n$ and $\forall y \in R,\ \forall x, p, \xi \in R^n$ coefficients satisfying

$$\begin{cases} \Lambda^{-1}\lambda(p)\omega(x) \mid \xi \mid^2 \leq \quad (\xi, A(x,y,p)\xi) \leq \Lambda\lambda(p)\omega(x) \mid \xi \mid^2 \\ \quad f(x,y,p) \leq \qquad\qquad \frac{1}{k}\Lambda(1+\lambda(p))(1+\mid p \mid) \end{cases} \qquad (2)$$

For some $\Lambda \geq 1, k > 1$ and some continuous mapping $\lambda : R^n \to R_+$,for which there exist λ_0 and $M > 0$ such that $\lambda(z) \geq \lambda_0$ for $\mid z \mid \geq M$. $\omega(x)$ A_p -is Makenxoupt weight function. For study this problem we using stohastic differential equations and noisy systems.

ASTHENIC SYNDROME AS AN INDICATOR OF THE QUALITY OF LIFE OF CANCER PATIENTS

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Keywords: asthenic syndrome, cancer of the digestive system

RELEVANCE. Manifestations of asthenic syndrome affect physical and intellectual capabilities of patients, significantly reducing their quality of life and thus worsens the prognosis of the underlying disease. The occurrence of asthenic syndrome (AS) is associated with the characteristics of premorbid condition, constitutional morphological type, depletion of the functional capabilities of the nervous system as a consequence of autointoxication or exogenous toxicities. This allows us to consider the AS as an adaptive reaction.
Diagnosis and correction of AS is especially important at the stages of radiation therapy, given its specificity and potential side effects.

METHODS. We analyzed the data of 243 patients including 83 (34.2%) with esophageal cancer, 39 (16%) with gastric cancer, 25 (10.3%) with pancreatic cancer, and 96 (39.5%) with rectal cancer. Diagnosis of the underlying disease was carried out according to international standards, and the confirmation of AS was based on the anamnesis and questionnaire.

RESULTS. It was found that 108 patients (44.5%) had varying degree of AS. According to the classification, 79 (32.5%) of these patients had organic, 22 ((9.1%) - mixed, and 7 (2.9%) had primary psychogenic asthenia. AS was most frequently observed in patients with esophageal and pancreatic cancer (19% and 12%, respectively) and encountered less among patients with rectal cancer (4.5%). Clinical manifestations of asthenia included features related to both premorbid condition and the course of the underlying disease. In most cases, AS presented with complexity of symptoms with propensity for cognitive symptoms (8.0%), pain disorders (12.2%), autonomous dysfunction (10.8%), emotional (7.3%) and metabolic and endocrine disorders (6.2%). An inverse correlation was observed between the effectiveness of anticancer therapy and the intensity of the AS ($P \leq 0.05$).

CONCLUSIONS. In patients with the presence of malignant process, AS is somatogenic and its timely diagnosis and management is necessary to improve the quality of life.

APPLICATION OF "NONSTRAIN" HERNIOPLASTY IN STRANGULATED VENTRAL HERNIA WITH MONITORING OF INTRA-ABDOMINAL PRESSURE

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Key words: ventral hernia, hernioplaty, intr-abdominal pressure

Background: Strangulated ventral hernia remains one of the most spread emergency surgical diseases. In surgeries of ventral hernia there is a high risk of a sharp increase of intra-abdominal pressure (IAP) as a result of reduction of the volume of abdominal cavity during the tightening plastics of the front wall of abdominal cavity.

The aim of this study: improving the results of surgical treatment of patients with strangulated ventral hernias (SVH).

Material and methods: Results of surgical treatment of 128 patients, operated in Scientific Center of Surgery named after M.A.Topchubashov on for strangulated ventral hernias with the use of various methods of plastics of the hernial defects for the period from 2017 to January, 2021, were analyzed. 54 patients (42.2%) of the basic group underwent "nonstrain" hernioplasty with the use of meshy endoprosthesis, 74 (57.8%) patients of the control group underwent "strained" plastics of the hernial orifices by local tissues. Intra-abdominal pressure was measured indirectly, by measuring pressure in urine bladder.

Results: In the basic group before operation, IPH (intraperitoneal hernia) of the Ist degree was diagnosed in 5 (9.25%) patients, II – in 6 (11.11%), III – in 4 (7.40%), IV – in 1 (1.85%). In the control group, respectively - in 8 (10.81%), 5 (6.75%), 5 (6.75%) and 2 (2.70%). The analysis of dynamics of IAP in patients of the basic group revealed that nonstrain hernioplasty with the use of polypropylene meshy endoprosthesis assists to statically reliable reduction of the level of IAP in the first 24 hours after surgery with 16.2±3.3 up to 9.5±2.3 mm of mercury column ($p<0.05$) and does not lead to its increase in future. After performance of hernioplasty by local tissues in the first 24 hours after operation, IPH of the IInd degree was recorded in 57 (77.02%) patients. Later on, to the 5th day after operation, IAP was increased in these patients up to 23.8 ±4.8 mm of mercury column. The syndrome of IPH was diagnosed in 5 (6.75%) patients. During the postsurgical period, early complications in the basic group were observed in 9 (16.6%) patients, in control group - in 12 (16.2%). One of the frequent complications, seroma was recorded in patients with plastics by polypropylene endoprosthesis – 4 (7.4%). The analysis of the frequency of incidence of early postsurgical traumatic complications in various types of hernia didn't reveal the reliable difference between basic and control groups, where the percentage of complications constituted respectively 16.6 and 16.2.

Conclusion: Nonstrain hernioplasty with the use of meshy transplants in emergency surgery of ventral hernia opens broad possibilities for better treatment of the given disease. "Nonstrain" hernioplasty is one of the most significant measures of prevention against the development of the abdominal compartment syndrome. Closure of large hernial defects of the front abdominal wall by the meshy endoprosthesis according to the type "patch".

COMPARATIVE RESULTS OF "EARLY SURGERY" AND "DELAYED SURGERY" FOR GUNSHOT WOUNDS

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Key words: gunshot wounds, early surgery**,** delayed surgery,

Relevance: The fact that our country has been at war for the past 30 years and that 2,904 people were killed and over 10,000 injured in the 44-day war of 2020 makes it necessary to study gunshot wounds.

Objective: to restore the working capacity of the wounded faster, by choosing more effective methods of treatment, to prevent unwanted complications.

Material and methods: The research is based on the fact that about 400 wounded servicemen with similar diagnoses treated in military and civilian hospitals in Fuzuli, who received many wounded during the war, ended up with significantly different results during their recovery.

Results and their discussion. Early surgery is surgery that occurs within the first 24 hours after injury. Delayed surgery is surgery that takes place 24-48 hours after the injury. Surgery was performed on the wounded with similar diagnoses for both objective and subjective reasons at different times, and this manifested itself during the recovery period. We present a comparison of early or delayed surgical interventions, depending on the location of the trauma and the general condition of the injured.

1. Damage to the environment: a) Timely intervention of the wounded with vascular damage made it possible to avoid amputation of the limbs. In delayed situations, amputation was inevitable. b) There was no significant difference in early versus delayed surgery in non-vascular casualties. However, differences were noted during the recovery period.
2. Delayed surgical interventions are more successful for injuries with hemorrhagic or traumatic shock. The patient underwent surgery after resuscitation and stabilization.
3. Although early interventions for abdominal injuries were more successful, delayed interventions were also quite successful, but the operations differed in that they were one-moment and two-moment.
4. Early intervention has been shown to be very effective in brain and spinal cord injuries.

Conclusion: Observations have shown that it is not possible to provide assistance to all wounded at the same time due to the increased workload in hospitals near the war zone during the war. It is useful to choose the method of early or delayed surgery based on the principle of selection of the wounded.

MORPHOFUNCTIONAL AND STRUCTURAL ORGANIZATION OF STEM CELL TRANSPLANTATION IN THE TREATMENT OF LIVER CIRRHOSIS

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The problem of the treatment of liver cirrhosis (LC) is one of the important problems of modern medicine. Despite the progress achieved in the treatment of this disease, in many patients it was impossible to achieve the stabilization of the process and the effective regeneration of the liver. One of the new trends in the treatment of diseases of the CPU is the transplantation of stem cells. In this work we studied the effect of cell transplantation of the total bone marrow on the reparation processes in the liver by an artificially created LC model in mice (3-month subcutaneous injection of carbon tetrachloride). Investigations were carried out in 27 white rats conditionally divided into 2 groups.

Group I included 13 rats in which the treatment program was based on the generally accepted traditional conservative measures. II group consisted of 14 rats. The animals in this group were injected single dose of bone marrow cells (with the stem cells) intravenously and intrahepatically in 50x106 cells dose per mouse. It should be noted that in the II group of animals we every day (10 days) administered «Heptral – (ademetionin)» in a dose for the stimulation of the regeneration of the transplanted stem cells. In this work we used wide range of laboratory, functional studies. The moment of the formation of cirrhosis and effectiveness of treatment was determined by biochemical (serum ALT, ACT, LDH, albumin) criteria. Assessment of the functional recovery of the liver was performed on the 4, 6 and 8th weeks from the moment of development of LC. On the example of an experimental model of the LC it was shown that administration of stem cells led to increased regenerative capacity of the liver in the form of its albumin synthesing function by 12.2% (as compared to the animals of group I). Analysis of biochemical changes in both groups of animals showed that the most sustainable reduction of transaminases starts on the 7th days from the start of the treatment, a more active process of decline began at the level of ALT at the same time the level of AST also decreased, but not quite intensively. In the interval between 11 and 21 days from the moment of introduction of stem cells decrease in the levels of ALT and AST is more intense than on other days of the study. Thus, the level of AST in this interval decreases from 0.81 to 0.49 mmol/L, levels of ALT from 0.72 to 0.52 mmol/l. On the 21st day from the moment of introduction of the stem cell the level of AST in the group II, unlike the animals of group II, reached the threshold. ALT levels in both groups was slightly higher than the normal range, but the dynamics of decline remained stable.

Given the above stated, we can conclude that the stem cells transplanted by this method have a noticeable stimulating regenerative effect on the cells of the liver affected by cirrhosis.

EXCESS BACTERIAL GROWTH IN THE SMALL INTESTINE DURING ENDOSCOPIC TREATMENT OF PATIENT WITH ACUTE BILIARY PANCREATITIS

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Background. Despite the achievements in the last years of treatment of patients with acute biliary pancreatitis (ABP), high indicators of postoperative complications and undesirable clinical manifestations of surgical malpractice make it difficult. In this connection, the development of methods of treatment and prevention of complications with the use of pathogenetically based methods of correction have not lost their relevance.

The purpose of the work is to study the degree of discovery, as well as the correction in the small intestine of patients with acute biliary pancreatitis of excessive bacterial growth to improve the results of their surgical treatment

Materials and methods. The results of endoscopic treatment of 35 patients with OBP were analyzed (2018-2020 years). Among the indicated patients 11 (31.4%) were the face of a man, 24 (68.6%) - the face of a woman. The age varied within 27-73 years, the average age at this time was 48 ± 3.2 years.

Conclusion. Examination of the respiratory H2 test showed an increase in this indicator in 25 (71.4%) patients with ABP before surgery. Application in the complex treatment of patients with the indicated category of the drug Faximin (rifaximin) according to the proposed method allowed to reduce the clinical manifestations of postcholecystectomy syndrome and to correct the degree of overgrowth of highly bacterial contagious.

Key words: acute biliary pancreatitis, endoscopic surgery, excessive bacterial growth, H_2 respiratory test, Rifaximin

THE TIMING OF LAPAROSCOPIC CHOLECYSTECTOMY AFTER ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATICOGRAPHY IN CHOLELITHIASIS AND CHOLEDOCHOLITIASIS

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Background: Cholelithiasis is one of most common diseases of gastrointestinal system. It is seen in 10% of the adult population. In nearly 4-15% of cases who have gallbladder stones, have also common bile duct stones The most common and acceptable treatment approach in patients who have cholelithiasis and choledocholitiasis is that firstly stones which obstruct the duct, are removed by means of Endoscopic Retrograde Cholangiopancreaticography (ERCP) and then laparoscopic cholecystectomy is made. The rate of conversion is high in laparoscopic cholecystectomy after ERCP. There is no consensus on how long has to wait between ERCP and laparoscopic cholecystectomy.

The objective of our study is to reveal the optimum time of waiting for a laparoscopic cholecystectomy after ERCP in patients with cholelithiasis to whom ERCP has been made due to choledocholitiasis and to minimize the rate of conversion to open surgery. .

Material and method: 157 patients applied to Scientific Center of Surgery after named M.A.Topchubashov, Azerbaijan Medical University and «Diagnoz clinic" due to cholelithiasis and choledocholitiasis between January 2010 and December 2021 and to whom laparoscopic cholecystectomy had been performed; were analyzed retrospectively. 57 of patients were male and 100 patients were female. The average of age was 54.5(19-87 years old). Patients were divided into 3 groups according to the time passing between ERCP and laparoscopic cholecustectomy as Group I (short time intervals: 7 days or less): 53 patients, Group II (medium time intervals: 8-42 days): 70 patients and Group III (long time intervals: 43 days and more): 34 patients. Groups were compared between each other in terms of age, gender, ASA score, time passing from ERCP to operation, number of ERCP, stent usage, complications occurred when waiting the operation, complications during and after the surgery, rate of conversion to open surgery, factors effecting the conversion and period of hospitalization.

Results: It was seen that; in 22(14%) of 157 patients to whom laparoscopic cholecystectomy was applied after ERCP, the surgery converted to open surgery and this rate was distributed to Groups such as 7 (13,2%) patients in Group I, 8(11,4%) patients in Group II and 7(20,6%) patients in Group III. When looking at rates of conversion to open surgery between groups, there was no statistically reasonable difference (p=0.406). It was determined that the most important factor effecting the conversion to open surgery in laparoscopic cholecystectomies after ERCP, was the number of ERCP. It was observed that the laparoscopic operations were converted to open surgeries in 15(11.3%) of 133 patients who had one ERCP before and 7 (29,2%) of 24 patients who had two or more ERCP before.(p=0.048). It was seen as the common

bile duct stone extraction and stent placement to common bile duct during ERCP have no effect on conversion to open surgery (respectively p=0.454 and p=0.058). It was stated some complications such as acute cholecystitis, choledocholitiasis, biliary pancreatitis and cholangitis were occurred in some patients when they were waiting for the surgery after ERCP. When groups were analyzed; it was observed that the rate of complications increases as the waiting period for surgery increases (p:0.018). In our study, it was concluded that all three groups shows similar features in terms of intra-operative and postoperative complications and there was no statistically reasonable difference between them (respectively).

Conclusions: As a result of our study, timing of laparoscopic cholecystectomy after ERCP have no affect on the rate of turning to open surgery but we determined that lesser time for waiting for the operation after ERCP result with the lesser biliary complications occurred waiting the surgery.

COMPARATIVE EVALUATION OF SOME PHYSIOLOGICAL CHARACTERISTICS AND PRODUCTIVITY ELEMENTS IN THE SECOND GENERATION HYBRIDS AND PARENTAL FORMS OF WHEAT VARIETIES EXPOSED TO NACL

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Soil salinization is one of the significant environmental factors that limit the growth, development and productivity of plants. The study aimed at obtaining new, salt-tolerant varieties allowed the comparison of some physiological characteristics and productivity indices of the F2 generation hybrids and parental forms during the grain filling and grain maturation stage of the vegetation. Statistical analysis of the physiological parameters and main indices of productivity was performed and the hybrid and parental forms were evaluated for salt-tolerance.. The objects of the study were parental and hybrid wheat forms grown under normal and salinity (0,98% NaCl) conditions. Local durum *(T.durum Desf.)* and bread *(T.aestivum L.)* wheat varieties such as Sharg, Garabagh, Barakatli-95, Mirbashir-128, Gyrmyzygul-1, Gobustan were used as the parental forms of the F_2 generation hybrids. The second generation (F_2) hybrids obtained from seven combinations during the study were planted on the field of $1m^2$, under normal conditions. For the experiments, 300g NaCl was added to the soil before sowing, during tillering, earing, and grain-filling stages. Watering was performed at the tillering, earing, and grain-filling stages. Physiological parameters such as chlorophyll content, relative water content, and PSII activity have been studied in parental forms and hybrids Productivity indices such as spike length, the number of spikelets per spike, spike weight, the number of grains per spike, grain weight were compared. Salt-tolerance appeared to be more pronounced in parental genotypes Garabagh and Gobustan and in hybrid forms ♀Garabagh x ♂Gobustan, ♀Garabagh x ♂Mirbashir-128.

Keywords: *wheat hibrids, chlorophyll, photosystem II, tolerance, productivity*

NOSOCOMICAL INFECTIONS AND SENSITIVITY TO ANTIBIOTICS IN CHILDREN'S CLINIC

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Nosocomial infections (NI) continue to be an important problem in our country. NI also causes problems such as long hospital stays and long-term treatment. In this study, we aimed to investigate susceptibility to nosocomial infections, risk factors, pathogens, and antibiotics in patients admitted to the Children's Clinic of the National Oncology Center.

Key words: Nosocomial infections, Cancer, Children

Material and method: The study was conducted prospectively in 96 patients diagnosed with infection at the National Oncology Center's Children's Clinic between January and December 2020, and was confirmed by the results of infection studies. Of the 1,811 patients monitored in this study, 67 (5.3%) had episodes of infection in 67. An automatic system BacT / Alert (BioMerieux, France) was used for blood samples. Positive specimens were transplanted into bloody, EMB (eosin methylene blue) and Saburo dextrose agar for 18-24 hours at 37 ° C and other samples were transplanted into bloody, EMB and Saburo dextrose agar for 18-24 hours at 37 ° C at VITEK2 Compact (BioMerieux, France) is identified in the system analyzer.

Result: The highest rate of nosocomial infection (24.7%) was found in the intensive care unit. The most common infection in our study is bacteremia (50%). This was followed by urinary tract infections (41.7%) and lung infections (4.2%). In our study, 54.2% of the isolated pathogens were gram-negative bacteria, 33.3% were gram-positive bacteria, and 12.5% were Candida-type fungi. The two most common pathogens were E. coli (22.9%) and colaza-negative staphylococci (16.7%), Klebsiella spp. (15.6%), S. aureus (11.5%) and candidiasis-type fungi (12.5%). In bacteremia, coagulase-negative staphylococci, primarily E. coli, were found in urinary tract infections.

Conclusion: Indications for invasive interventions to reduce nosocomial infections should be well evaluated and the principles of infection prevention should not be violated. , conscious antibiotic use and health group hand washing habits should be established.

SOME ARCHEOBIOLOGICAL MATERIALS OF THE LATE BRONZE-EARLY IRON AGE FROM THE TERRITORY OF AZERBAIJAN

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Late Bronze-Early Iron Age (the second half of the second millennium BC - the beginning of the first millennium BC) the territory of Azerbaijan, as well as the South Caucasus region as a whole is characterized by very high cultural and economic development. Traces of a number of ancient cultures of this period such as Khojaly-Gadabay, Mugan, Kur-Araz cultures were found in the territory of Azerbaijan. Archeological excavations performed in these places revealed rich archeological materials. Osteological materials obtained in the Middle East, especially in Azerbaijan have been little studied at the molecular level. For the first time in Azerbaijan, a number of osteological materials were obtained from the above-mentioned cultural human settlements for molecular-genetic analysis of archeobiological remains. Three anthropological materials (bone samples) from the Khudutepe settlement, one from the Tovuzchay necropolis, two from the graves of the Aziztepe graves, two from the Komani Kurgan, one from the Samadabad necropolis of the Albanian period, and one from the Hasansu Kurgan were taken. These samples are kept in the fund of the Institute of Archeology, Ethnography and Anthropology of ANAS. Ancient DNA is better preserved in the teeth and petrosa, therefore the samples for future analysis are mainly taken from these parts. During sampling, the sterility conditions were met to prevent contamination with modern DNA. Isolation of ancient nuclear and mitochondrial DNA from the samples will be performed with special kits. aDNA sequencing and bioinformatics analysis will be applied in the next steps. aDNA sequence data obtained from ancient human remains, can be compared with appropriate DNA data of modern humans available in relevant international databases. Based on aDNA data, it is also possible to determine the gender of ancient people, to identify some diseases, DNA haplogroups (based on Y-chromosome and mitochondrial DNA), migrations, and their reasons, etc. In the future, similar studies are planned with plant and animal remains from archeological excavations. This will provide information on animals that once lived and domesticated in the area, cultivated plants, endangered species, etc.

Keywords: *Archeological excavations; historical settlements; ancient DNA (aDNA), antropoligy; bone samples.*

COMPARATIVE STUDY OF SUBCELLULAR DISTRIBUTION OF THE OXALOACETATE DECARBOXYLASE ACTIVITY IN CHICKPEA AND MAIZE LEAVES

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Keywords: maize, chickpea, OAD, activity, localization

Subcellular localization of the oxaloacetate decarboxylase (OAD) activity has been discussed in higher plants with different photosynthesis mechanisms (C_3, C_4, and CAM). OAD catalyzes the synthesis reaction of pyruvate, which is a center of energy formation in plants, through decarboxylation of C4-dicarboxylic acid (OA). It also ensures the rapid formation of pyruvate in chloroplasts, which is needed for the biosynthesis of lipids and aromatic amino acids. OA is the first product of the assimilation of CO2 converted into malate and aspartate in the chloroplasts of C4 plants. OAD was first found in the chloroplasts of C3 plants. It was thought that C4 plants did not need OAD because these plants had malic enzyme (ME) capable of performing the same function. However, subcellular distribution, metabolic regulation, and physicochemical properties of OAD have been studied in maize leaves, several C3, and CAM plants. The differential centrifugation method revealed that 83.1% of the total OAD activity was localized in the chloroplasts, 13.9% in the mitochondrial matrix, and only 3.0% in the cytosol of the maize leaves. OAD activity was determined in CAM plants *Simpervivum sobolifemm* (0.063±0.003 EU/mg protein), *Sedum telephium* (0.050±0.002 EU/mg protein), in a C4 plant *Zea mays* L. (0.068±0.003 EU/mg protein) and in C3 plants such as *Triticum aestivum*da (0.073±0.004 EU/mg protein), *Pisum sativum* (0.054±0.003 EU/mg protein) and the highest activity was found in *Taraxacum ceratoform* (0.150±0.007 EU/ mg protein) [Trukhina et al., 2002]. We have studied the OAD activity in leaves of a C3 plant chickpea. The OAD activity was found to be more stable in the pH 6.5-7.0 range of the homogenization medium. The highest activity was observed at pH 7.0-7.5. Our results suggest that OAD is localized in membranes and the stroma of the chloroplast.

INFLUENCE OF THE COMPOSITION OF RIVER WATER ON SOILFORMING PROCESS (AS AN EXAMPLE OF THE BILNA RIVER)

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Located in the Talish mountains, this land formerly known as Zuvand has been called Lerik since 1938. Lerik region is bordered by Yardimli in the south and south-west, Masalli in the north-west, Lankaran in the coast and Astara in the south-east.

Along the border with Iran stretcher the Talish range, the Peshtasar range in the north, and the Burovar range in the north. The Zuvand (Diabar) is situated between Talish and Peshtasar ranges. The geological structure of the zone is especially formed form the volcanogenic-sedimentation of Palogen. Summer is mild dry and the winter is cold in here. A main reason for the dry climate is that the area is surrounded by mountains on all sides and warm air flows from the south–west. An amount of the annual rainfall reaches 300-800 millimeters because the territory of the region is located at a high altitude above sea level. The average annual temperature gradually decreases depending on the height of the sea level. The mild-warm humid climate is characteristic for the main part of the zone. The soils of Lerik are divided into 4 sections: Mountain-meadow soils, cinnomonic mountain-forest soils, brown mountain-forest soils, yellow-mountain-forest soils.

The plant cover, especially consists of shrubby and sparsely woody meadows and mountain forests (oak, hornbeam, beech). There are xerophilous plants and partially subalpine meadows. The mountain xerophyte and steppe, meadow-steppe plants expand at the height of 1400-2000 m from sea level in the arid zone of Zuvand.

There are various river nets in the zone: the Sors, Zuvand, Lerik, Bilna, Lakar, Vazaru and other rivers. Although the zone was investigated in different directions, its water wasn't studied enough.

We took river water from Bilna, which flows through the territory of Lerik region, by "batometer-bottle" method and performed laboratorial researches (geographical coordinates are N38°47.088, E48°23.607). The Bilna river is flowing from the foothill zone of the village located in the Noda administrative zone unit in the Lerik region. A main aim of the research was to study an influence of changes in the water composition on soilforming process. It is known that a basic index of the irrigated water quality is identified with the organic and mineral substances in its composition. The organic and mineral substances enter the soil with the irrigated water and rise its fertility, this creates the basis for high productivity.

It is seen from the results of the Bilna river that the water mineralization is 0,4 g/l. A quantity of sulphate ion is 0,082 g/l, hydrocarbonate is 0,317 g/l, but Cl ion -0,045 g/l. An amount of Ca^{+2}, Mg^{+2}, Na^{1}+K^{1} ions in the water is 0,084; 0,012; 0,089 g/l. An environment of the Bilna river is weak-alkaline-7,05. It is seen from the research results that the mineral composition of water doesn't interfere for growing of agricultural plants.

Key words:dry residue, environment reaction of water, mineralization, river water

LYMPHATIC DRUGS OF LICORICE IN THE TREATMENT OF COVID-19 INFECTION

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Key words: Covid-19, licorice, lymphatic activity.

The Republic of Azerbaijan has pursued a strong policy in building an independent, democratic, legal, civil and secular state. The Second National Patriotic War, written in golden letters in the history of the world starting from 27.09.20, ended on 08.11.20 with great successes and victories. November 8 is our National Victory Day! Unprecedented work is being done in our beautiful Karabakh, which is an integral part of Azerbaijan. Therefore, we express our deep gratitude to our esteemed President Ilham Aliyev, we are trying to give impetus to these achievements.

Leadership of the Republic of Azerbaijan Mr. Ilham Aliyev addressed to the scientists of our country on May 15, 2012 No. /2 / 483 the instructions on the efficient use of Azerbaijan's natural resources, including the rich flora and fauna, and the organization of the production of national pharmaceutical products.

Scientists of the Azerbaijan Medical University have obtained scientific and practical innovations in this direction. Since 1990, scientists of several departments of the Azerbaijan Medical University have conducted research on 12 very promising medicinal plants from the flora of Azerbaijan. The most promising of these plants was the licorice with strong lymphatic activity. As a result of scientific research of scientists of the Azerbaijan Medical University, the antiviral properties of licorice drugs, reducing blood clotting and restoring the activity of the immune system have been proven in the treatment of bronchopulmonary diseases.

On October 28, 2019, our President Ilham Aliyev inaugurated the "Licorice Industrial Park". It is gratifying that the medicinal syrups produced at "Licorice Industrial Park": Licorice; Licorice "Immunovit"; Biyan “Broncho”; Biyan “Sed”; Biyan “Hem”; Biyan “Cardio”; Biyan “Uro”; Licorice "Gripson" justified itself in the pandemic. Despite the use of many drugs in the treatment of COVID-19 infection, which has been declared a coronavirus pandemic today, the use of phytopreparations in the world has eventually become the most promising.

SEARCH AND DEVELOPMENT OF PLANT ORIGIN PRODUCTS BASED ON NATURAL RAW MATERIALS OF THE KARABAKH

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Key words: medicinal plant, reproductive system, vaginal dosage forms

November 8 is the day of the Great Victory!!! The valiant sons of Azerbaijan, under the leadership of the victorious Supreme Commander-in-Chief Ilham Aliyev, won a Victory over the enemy, liberated our lands, which had been under occupation for 30 years. One of the five main priorities in the program "Azerbaijan 2030: National Priorities for Socio-Economic Development" adopted by President Ilham Aliyev is a great return to the territories liberated from occupation. During the occupation, the biodiversity of the Karabakh region was seriously damaged. The portal, opened on the initiative of the President, “Karabakh.Center” has been created to inform the world community of the scale of the damage. The restoration of the flora of Karabakh will open up new opportunities in the creation of new herbal preparations using national raw materials.

Reconstruction and study of the rich composition of medicinal plants in this region is a high priority in reproductive health programs. The reproductive health of Azerbaijani women is the guarantee of a strong and invincible nation. Ensuring women's health through the production of modern effective natural remedies is the goal of the country's scientific medical community. In the direction of the development of herbal medicines, scientists of the Azerbaijan Medical University have been conducting research in various directions for many years, including the creation of medicines for the treatment and prevention of female genital diseases. As a result of these works, vaginal dosage forms with anti-inflammatory, wound healing, immunostimulating and other effects have been obtained. Further study of herbal medicinal products using raw materials from the Karabakh region seems to be especially relevant taking into account the climatic and geographical conditions that affect the qualitative and quantitative changes in the composition of plants.

PROBLEMS OF TREATMENT OF DEPRESSION IN CHILDREN WITH EPILEPSY

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Introduction. Depression in children with epilepsy is not detected and treated in time. Because epilepsy is a chronic disease, treatment of comorbid depression should be considered appropriate. Although there is literature on the treatment of epilepsy and depression in the elderly, this problem has not been resolved in children.
Purpose of the study. It consists of the detection of depressive episodes during epilepsy in children aged 12-17 years.
Material and method. Patients with various forms of epilepsy (12-17 years) were examined during the study. Epilepsy and depression were assessed on İCD-10. The severity of depression was assessed on the Hamilton Depression Rating Scale. In addition to anticonvulsants, patients were prescribed appropriate antidepressants for the treatment of comorbid depression. For this purpose, an antidepressant from the SSRİ group was used. Positive dynamics was observed during the re-examination.
Results. Different degrees of depression were found in patients with epilepsy aged 12-17 years. Positive dynamics was found after the appointment of antidepressants.
Conclusions. The depressive episode is found to be one of the leading psychopathological disorders during epilepsy. The comorbidity of depression is high in children with epilepsy. In addition to anticonvulsants, complex treatment with antidepressants is very effective in eliminating these disorders. In this case, both the frequency of seizures is reduced, and the severity of depression is alleviated or completely eliminated. Timely detection and treatment of comorbid depression in children can improve their condition and prevent undesirable complications - suicide.

Keywords: children, epilepsy, depression, treatment tactics.

BIODIDIVERSITY GREAT KARABAKH TERRITORY OF THE SMALL CAUCASUS

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Keywords: *Karabakh, dendroflora, dendrochronological analysis, taxonomic structure, ecosystems*

The current state of the dendroflora of Azerbaijan, the study and reproduction of the bio ecological features of promising trees and shrubs have in recent years become a matter of great state importance in the greening of our country. At the Institute of Dendrology of ANAS, monitoring is carried out in the areas of natural distribution of rare and endangered species of Azerbaijan, changes in populations, botanical description, and ecology are studied and grouped by systematic analysis. The introduction of exotic plants, taking into account their ecological, biological and decorative features, has recently led to significant changes in the plant assortment.

The main purpose of the research conducted at the Institute of Dendrology of ANAS is biometric analysis of processes occurring in the populations of rare species in the natural and cultural flora of Azerbaijan, assessment and protection of these ecosystems, study of their bio ecological features, sustainable application to local soil and climatic conditions.

We organize scientific trips to different regions of the Republic of Azerbaijan and conduct observations, determine the types of edifiers that dominate forest ecosystems, and take the geographical coordinates of the territories.

Karabakh, one of the most beautiful parts of Azerbaijan, has always been distinguished by its diversity of climate and landscape, richness of flora and fauna. About 2,500 plants, including more than 460 species of wild woody plants, are spread in these areas. As a result of the occupation of the Karabakh territories, the agricultural system in general, as well as the flora and fauna in the region, were seriously damaged. For many years it was looted by Armenian invaders, cultural monuments were destroyed; many species of flora and fauna were destroyed.

Study of the dendroflora of the liberated areas, repatriation of rare species, study of plant pathogens and pests, development of integrated control methods, monitoring of forest areas, introduction of dendroclimate and dendrochronological analysis is our main purpose.

The priority in the direction of research is the inventory and certification of historical natural monuments, dendrochronological analysis, study of the current state of senopopulations in forest phytocenoses, the study of taxonomic composition, the gradual restoration of the gene pool. We believe that in the near future, the restoration of wildlife in these areas, which are subject to environmental terror, will be achieved.

RESULTS OF PRELIMINARY RADIOLOGICAL SURVEYS OF THE LIBERATED TERRITORIES

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Summary

The study examined the results of active military operations in the liberated territories, the possibility of unoccupied or lost radioactive sources in the area, as well as the risk of environmental and radiological terror as a result of uncontrolled areas. During the monitoring carried out until September 1, 2021, village and settlement roads which cleared of mines and unexploded remnants of the war in the liberated areas, covering the areas of planned state facilities, including 6 110/35/10 kV substations and 3 airports, 58 planned objects of state importance were radiologically studied. Twelve rivers flowing throughout the liberated territories (Basitchay, Oxchuchay, Dashalti, Hakari, Bazarchay, Bargushad, Kondalanchay, Chaylag, Guruchay, Gargarchay, Khachinchay and Tartarchay rivers) were analyzed for radionuclide contamination. In addition to natural radionuclides, artificial radionuclides such as ^{137}Cs, $^{239+240}Pu$ and ^{241}Am were found in the sediment samples taken from Basitchay, Oxchuchay, Hakari and Tartarchay. The activity ratios of uranium isotopes $^{234}U/^{238}U$ and $^{238}U/^{235}U$ found in the samples are 1,05 ± 0,10 and 21 ± 1, respectively, proving that they are of natural uranium origin, and the activity concentrations measured in these samples are of natural origin.

The activity ratios of $^{239+240}Pu$ and ^{137}Cs isotopes in the samples are 0,045 ± 0,004, and the artificial isotopes found in the sediments are an indication of global nuclear weapons tests in the atmosphere and radioactive waste materials released into the environment as a result of the Chernobyl accident [1].

During the monitoring, 3 stray or lost radioactive materials with a source of radioactive alpha and gamma radiation were found in the liberated areas. One item containing ^{226}Ra radioactive substance in the territory of the former chemical union in Minjivan settlement of Zangilan region, ^{241}Am radioactive material with high alpha and gamma radiation source inside the T-72 enemy tank shot down in Yukhari Seyidahmedli village of Fuzuli region and a device containing radioactive substance ^{226}Ra, a source of alpha and gamma radiation, was found in the territory of Zod gold plant, which was illegally exploited by the enemies in Zod village of Kalbajar region.

The work was carried out in accordance with paragraph 72 of the comprehensive field plan of the Coordination Headquarters in the field of transport, communications and high technologies "Radiological and radioecological research in the liberated territories" to address urgent issues in the liberated territories of the Republic of Azerbaijan.

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LAPAROSCOPIC TREATMENT OF HEPATIC HYDATID CYSTS

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Key words: *Hepatic hydatid cyst, laparoscopic surgery, laparoscopic echinococectomy*

Introduction. . Echinococcosis is a parasitic disease with dangerous complications and relapses, especially in the Mediterranean, Middle East and Central Asia.

Aim. This article aimed to investigate the results of laparoscopic treatment of hepatic hydatid cysts and evaluation of its effectiveness.

Material and methods. The results of the 112 patients (70 women (62.5%)) aged 18-86 (median - 52.1 ± 2.0 minutes) who underwent surgical treatment of hepatic echinococcosis at the Department of Surgical Diseases I of the Azerbaijan Medical University in 2010-2020 were analyzed.

All patients underwent routine abdominal ultrasound, CT/MRI in 108 (96.4%) and CT of the chest in 47 (41.9%) and took Albendozol 200 mg twice daily for 2 weeks before surgery. Damage to the right side of the liver was 69 (61.6%), left side of the liver was 2 (28.6%), every 2 parts was detected in 11 cases (9.8%). In 66 patients (58.9%) 1, in 46 (41.1%) 2 and more cysts were found.

Laparoscopic surgery was performed in 86 patients (76.8%) and laparotomy in 26 (23.2%). Conversion occurred in 3 patients (unstoppable bleeding - 2, difficult localization - 1). Cysts with central (intraparenchymal) localization and overly calcified walls were considered exceptional criteria for laparoscopic surgery. Intraoperatively, cystine fluid was aspirated and 20% hypertonic saline (scolicidal agent) was injected into the cavity twice at short intervals, at which point the cyst wall was removed. The duration of the operation lasted 45-120 minutes (median: 78.9 ± 6.3 minutes). There were no complications or lethal outcomes requiring repeated surgery. The site of relapse was liver N = 2, and N=5 other relapses.

The median length of hospital stay was 4.7 ± 1.1 (3-9) days after laparoscopic excision of splenic hydatid cyst and after laparotomy was18.4 ± 3.2 (8-30)days.

The result. Early rehabilitation of patients, excellent aesthetic effect, a shorter postoperative stays in hospital as well as the reduced economic costs, which are the advantages of laparoscopic surgery, confirm the feasibility of performing excision of splenic hydatid cyst using laparoscopic technology.

CALCITONIN AS A TUMOR MARKER OF MEDULLARY THYROID CARCINOMA

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Medullary carcinoma of the thyroid gland is a malignant neoplasm that develops from specific cells (C-cells) of the gland tissue that produce hormones - calcitonin, prostaglandins and serotonin. It is rare, in 5-7% of all diagnosed types of thyroid cancer. Calcitonin-peptide hormone, produced mainly by parafollicular C-cells of the thyroid gland, has a hypocalcemic effect. In oncology, calcitonin is the main diagnostic marker for thyroid cancer associated with C-cell malignancy.

Keywords: medullary thyroid carcinoma, markers, calcitonin

Materials and methods. A control group of 415 patients registered at the Oncological Center was selected for the study. The sample was carried out in the period from 01.01.2020 to 31.12.2020. Of these, 19 are men and 49 are women, the age range is from 22 to 67 years. The study of the level of calcitonin in the blood was carried out in the blood serum using an electrochemiluminescence analyzer.

Result. Of the 415 patients examined, 68 patients had an elevated level of calcitonin, of which 42 patients had values 10 times higher than the reference values. Among the patients with an increased calcitonin value, 49 patients were women, 19 were men. In 14 patients, the level of calcitonin exceeded 100 pg / ml. According to age criteria, among patients with improved results, 41 patients were up to 40 years old, 20 patients aged 40 to 60 years old, 8 patients aged over 60 years old.

Conclusion. Thus, in patients with medullary thyroid cancer, the assessment of calcitonin levels can be used in the postoperative period to make a prognosis and early detection of metastases and tumor recurrence. It is believed that the probability of medullary cancer at a concentration of calcitonin above 100 pg / ml approaches 100%. In the postoperative period, it is recommended to control the level of calcitonin after two to three months. A tumor marker index of less than 10 pg / ml indicates a favorable prognosis. If the level exceeds 150 pg / ml, or its level after surgery doubles in less than six months, this significantly worsens the patient's prognosis.

SEROLOGICAL AND MOLECULAR IDENTIFICATION OF *TOMATO YELLOW LEAF CURL VIRUS* IN AZERBAIJAN

AZƏRBAYCANDA TOMATO YELLOW LEAF CURL VİRUSUN SEROLOJİ VƏ MOLEKULYAR METODLARLA İDENTİFİKASİYASI

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By infecting the *Solanaceous* family plants the *Tomato yellow leaf curl virus* causes serious damage to the economy all over the world including Azerbaijan. Among the dangerous viral infections that infect the tomato plant (*Solanum lycopersicum* L.), the *Tomato yellow leaf curl virus* (*TYLCV*), which belongs to the genus *Begomovirus*, is of special economic importance due to the degree of infection. In order to detect this virus infection in Azerbaijan, phytopathological monitoring was organized in various regions where vegetable growing is well developed. Samples of tomato plants with characteristic symptoms were collected from the Absheron Peninsula and Guba-Khachmaz region, in July-August 2021. A large population of white-winged butterflies (*Bemisia tabaci*), which play a key role in the transmission of *TYLCV*, was observed on the upper surfaces of tomato leaves collected from the Absheron Peninsula. On the basis of visual diagnostics, the characteristic symptoms of the virus were observed in tomato leaves - yellowing of the leaf blades, rugged leaves, curling upward with getting a spoon-shaped, and premature rotting of the fruits. Subsequent studies were performed in the laboratory using modern serological and molecular methods. Total DNA was extracted from the collected plant samples by using the CTAB method, and the degree of purity and density was determined spectrophotometrically. DNA samples were initially analysed by serological-enzyme-linked immunosorbent assay (*IFA, DAS-ELISA*) methods, and identified by PCR method. PCR analysis was performed with specific primers MA13/MA26 designed for TYLCV. Amplification products were isolated using ethidium bromide in 1% TBE agarose gel, visualized and documented using Gel Documentation (Uvitek, England). As a result of the analysis, the expected fragment of ~ 1.2 kb was synthesized. Given the key role of Bemisia moths in the epidemic nature of TYLCV, it is advisable to control insect populations as a preventive measure in the first place.

Keywords: *Tomato yellow leaf curl virus, primer, PCR, tomato*

Solanaceous fəsiləsinin nümayəndələrində müxtəlif xarakterli virozlar törətməklə bütün dünyada, o cümlədən Azərbaycanda ölkə iqtisadiyyatına ciddi ziyan vurur. Tomat bitkisini (Solanum lycopersicum L.) yoluxduran təhlükəli virus infeksiyaları arasında Begomovirus cinsinə aid olan Tomato yellow leaf curl virus (TYLCV) yoluxdurma dərəcəsinə görə xüsusi iqisadi və təsərrüfat əhəmiyyəti kəsb edir. Azərbaycanda bu virus infeksiyasını aşkar etmək məqsədilə, 2021-ci ilin iyul-avqust aylarında tərəvəzçiliyin yaxşı inkişaf etdiyi müxtəlif bölgələrə fitopatoloji monitorinqlər təşkil edilmiş, Abşeron yarımadasından və Quba-Xaçmaz bölgəsindən, xarakterik simptomlara malik tomat bitkisi nümunələri yığılaraq toplanmışdır. Abşeron yarımadasından yığılan tomat bitkisi yarpaqlarının üst səthlərində TYLCV-nin transmisiyasında əsas rol oynayan ağ qanad kəpənəklərinin (Bemisia tabaci) geniş populyasiyası müşahidə edilmişdir.

Tomat yarpaqlarında vizual diaqnostika əsasında virusun xarakterik simptomları - yarpaq ayasının saralması, kələkötürləşməsi, ayanın yuxarıya doğru burularaq qaşıq formasını alması, meyvələrin vaxtından öncə yetişmədən çürüməsi və s. kimi əlamətlər müşahidə edilmişdir.

Növbəti tədqiqatlar laboratoriya şəraitində müasir seroloji və molekulyar metodlardan istifadə etməklə aparılmışdır. Toplanılmış bitki nümunələrindən CTAB metoduna əsasən total DNT ekstraksiya edilmiş, təmizlik dərəcəsi və qatılığı spektrofotometrik yolla təyin edilmişdir. Sonra DNT nümunələrinin müxtəlif seroloji-immunostrip test (Agristrip) və immunoferment analiz (İFA, DAS-ELİSA) metodları ilə ilkin diaqnostikası aparılmış, PZR və sekvens metodları ilə identifikasiyası həyata keçirilmişdir. PZR analiz TYLCV üçün dizayn edilmiş spesifik MA13\ MA26 praymerləri ilə aparılmışdır. Amplifikasiya məhsulları 1%-li TBE agaroza gelində etidium bromiddən istifadə etməklə ayrılmış, Gel Documentation (Uvitek, England) aparatının köməyi ilə vizualizasiya edilmiş və sənədləşdirilmişdir. Analizlərin nəticəsində ~1,2 kb ölçüdə gözlənilən fraqmentlərin sintezi baş vermişdir. Yekun olaraq, ancaq Abşeron ərazisindən götürülmüş nümunələr
pozitiv nəticə göstərmişdir. TYLCV-nin epidemiya xarakteri almasında Bemisia tabaci kəpənəklərinin əsas rolunu nəzərə alsaq, mübarizə tədbiri olaraq ilk növbədə həşərat populyasiyalarının nəzarət altına alınması məsləhət görülür.

Açar sözlər: Tomato yellow leaf curl virus, praymer, PCR, tomat bitkisi.

ISOLATION AND *IN-SILICO* CHARACTERIZATION OF DREB GENE FROM GENOME DONOR SPECIES OF WHEAT FOUND IN AZERBAIJAN

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DREB, the dehydration responsive element (DRE)-binding proteins belonging to the AP2/ERF family of TFs, play a significant role in the signaling network that modulates many plant processes. In the present study, we have isolated and molecularly characterized a DREB gene from ancestral diploid species of wheat. One-week-old seedlings of *T. urartu* (Au), *Ae. speltoides* (B) and *Ae. tauschi* (D) were used for genomic DNA extraction. Gene-specific primer pairs were applied for isolation of the DREB gene. The amplification products were purified using a gel extraction kit and sequenced. Data analysis was performed using FGENESH, BLAST, INTERPROSCAN, SMART, MAFFT, *ExPASy*, ProteinPredict, and PSIPRED tools. EnsemblGenomes and NCBI were used as integrative resources. Numerous SNP and 9 microindels were detected in the partial target sequence of the DREB gene in *Ae. speldoides*. Nonsynonymous SNPs were determined in *T.urartu* (1 transition and 5 transversions), and *Ae.tauschi* (2 transitions and 2 transversions). The amino acid substitutions caused by these mutations and the corresponding localization sites in the *T. aestivum* genome were identified. Analysis of amino acid sequences encoded by the putative DREB genes revealed strongly conserved AP2/ERF domain with two conserved functional amino acids (14th valine and 19th glutamic acid) that play crucial roles in the recognition of the DNA-binding sequence and two tryptophan rings that determine the geometry of GCC-box binding domain. Nuclear localization signal and conserved Ser/Thr-rich region were observed in the corresponding amino acid sequences. One α-helix and three β-sheets were detected in the secondary structure of the AP2 domain. The isolated sequences of DREB gene from *T. urartu* and *Ae. tauschii* was confirmed and registered in NCBI with Accession Nr.MZ935739 and MZ935740. Identification of the DREB gene in wheat progenitors and its characterization are important for evaluating their genomic material to enhance the biodiversity of cultivated wheat under stress conditions.

Keywords*: DREB, AP2 domain, NLS, Ser/Thr-rich region, ancestral wheat species.*
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DETERMINATION OF NITRATREDUCTASE ACTIVITY OF COW PEAS PLANT WITH THE PARTICIPATION OF *TRICHODERMA LONGIBRACHIATUM* IN NaCl SALT

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Key words: *Vigna unguiculate (L) Walp, NaCl, Trichoderma longibrachiatum, Nitratreduktase*

The research used the "Ayla" variety of the cow pea plant (*Vigna unguiculata (L) Walp*). Some of the seeds were treated with a cultural solution of *Trichoderma longibrachiatum* micromycetes extracted from the rhizosphere of the cow pea plant grown in the field on the Absheron Peninsula. The seedlings were grown in the ordinary and at 0,2; 0,4; 0.6% NaCl salinity.

Salinity significantly reduces the weight of cow peas. This is more noticeable in the roots of the plant (55%).

The results of a three-weeks study of the activity of the enzyme nitratereductase in the roots and leaves of the plant showed that the processing of plant seeds with micromycetes increases the activity of the enzyme in the roots and leaves of the plant, regardless of the experimental option. Under normal conditions, we see that the activity of the enzyme nitratereductase in the leaves increases by 98%, and in the roots - by 77%. At 0.4% NaCl salinity, the enzyme activity increases in leaves by 43% and in roots by 28%. At 0.6% salinity, *Trichoderma* increases the activity of the enzyme in the leaves by 61% and in the roots by 32%.

It is concluded that the decrease in the weight of cow peas in saline environments is due to the weakening of nitrate nutrition of the plant. *Trichoderma longibrachiatum* has a positive effect on the nitratereductase activity of cowpea in normal and saline environments. So, it can have a definite effect on the productivity process by enhancing the activity of the enzyme responsible for nitrate reduction.

MODERN PHYTOSANITARY CONDITION OF ABSHERON DENDROFLORA.

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Abstract

In the peninsula, it is impossible to carry out effective control measures against dendroflora without knowing the composition of pests. Therefore, the study of the species composition of pests and pathogens introduced to the dendrological plants introduced in the Absheron Peninsula, which is strongly exposed to various adverse environmental factors, is of great scientific and practical importance.

In this regard, the phytosanitary situation was studied and analyzed as a result of monitoring, route observations and stationary inspections carried out on perennial trees and shrubs introduced on the Absheron Peninsula. It has been determined that due to the unique natural soil-climatic conditions of the area and the diversity of local and foreign plant species introduced here at different times, as well as the impact of recent global climate change, large populations of pathogens and pests are formed here from time to time. Due to the strong influence of anthropogenic factors in the region, plants are always in a tense situation, so they are always more likely to be infected with pathogens and pests.

Studies have shown that there are few natural entomophagous species in the dendroflora of Absheron, as well as their inability to reproduce due to their weak activity and lack of a favorable ecological environment, so pests multiply more rapidly in such agrocenoses.

Thus, as a result of research, the dendroflora includes 10 aphids (*Homoptera*), 15 (*Coleoptera)*, 25 butterflies (*Lepidoptera*), 7 *Hymenoptera*, 35 *Hemiptera*, 2 trips (*Thusanoptera)*, 4 (*Orthoptera)*, including 2 snails (*Limaside*) and 1 tick (*Tetranychus*), total of 101 species of insects have been identified. At the same time, 25 pathogens - phytopathogenic species - were found in the dendroflora, and scientific research continues in this direction.

Keywords: dendroflora, phytosanitary situation, pests, pathogens, species composition.

IMMUNOMODULATORY EFFECT OF THE MACROCYCLIC DRUG AMPHOTERICIN B

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Key words: amphotericin B, immunomodulating action, macrocyclic drug

Amphotericin B has powerful immunomodulatory properties against host cells in vitro and in vivo, enhancing the host's immune response. This effect was shown not only in the presence of a pathogen,but also in the absence of a pathogen, stimulating the production of many mediators of the immune system. Interferon titers significantly increase (at 25 g / ml, titers increase almost 10 times) under the action of amphotericin B. Amphotericin B and its derivatives can produce cytokines by interfering with the activation state of macrophages.
Although amphotericin B is able to inhibit the growth of fungi through direct destruction mechanisms, probably it directly activates the immunity of the host, as well as induces the outflow of potassium from cells. The adjuvant efficacy of amphotericin B is applicable, safe and effective for human vaccines at a dose of 100 mkg.
The activity of amphotericin B leads to the release of cytokines/chemokines and pro-inflammatory and anti-inflammatory mediators. Protective action during infection correlated with immunomodulatory properties and pro-inflammatory activity caused by this preparation, which enhances the antifungal activity of polymorphonuclear cells and pulmonary macrophages against the causative agent of invasive pulmonary aspergillosis.

Amphotericin B revealed antiviral effects at a late stage of virus replication for rubella viruses. This drug interacts with the viral envelope at an early stage of viral infection. Amphotericin B can activate immune modulation by increasing immune response cytokines and pro-inflammatory reactions. So it can play the role of a potential antiviral drug, acting as antiviral therapy and enhancing immune reactions.

It is known that amphotericin B increases interferon production in mice. Cells treated with this drug enhance the penetration of polyriboinosinic and polyribocytidylic acid into the cell membrane, which acts as an impulse for the production of interferon.

BIOLOGICAL ACTIVITY OF PA AND THEIR DERIVATIVES ON CLONOGENIC CELL CULTURES, ASCITE CELLS AND RED BLOOD CELLS.

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Keywords: polyene antibiotics,levorin,malignant neoplasms

The study of the effect of antitumor compounds on malignant neoplasms in vivo and in vitro is one of the priorities of biology and medicine. determination of the biological activity of amphotericin B, levorin and its derivatives on clonogenic cell cultures, ascite cells, red blood cells (erythrocytes), which is due to the fact that many drugs used in chemotherapy have a significant toxic effect on erythron..In this regard, we have set the following tasks: To identify the regularity of the effect of polyene antibiotics (PA) - levorin and its derivatives and their biological activity - on blood cells and the proliferation of clonogenic cells To evaluate the hemolytic effects - DMSO, levorin and to identify the optimal doses of the drug against blood cells The development of a malignant tumor process in the body and the action of endogenous chemical factors is accompanied by changes in the structural and functional state of the plasma membrane of blood cells.and it leads to the accumulation in the peripheral blood of an increased number of young red blood cells in the bloodstream and the maximum death of old worn-out red blood cells. The mechanism of their action is associated with their binding to sterols of cell membranes, which leads to cell destruction. The cytotoxic effect of PA (levorin and its derivatives, as well as amphotericin B) on tumor cells in vitro and their survival was investigated, which is associated with the ability of antitumor drugs to cause changes in the lipid composition of erythrocyte membranes., which leads to a violation of the mechanical properties of erythrocytes and to a violation of the oxygen transport rate (cell aging). Along with antifungal activity in some of the PA - filipins, the methyl ester of amphotericin B has an antiviral effect. Ergosterol-containing fungi cells are 10-100 times more sensitive to the action of PA than cholesterol-containing cells. The selective permeability and membrane activity of PA depends on the structure of the antibiotic molecules included in the membrane.This gives grounds to conduct studies of the mechanical properties of erythrocytes during the growth of experimental tumors as well as under the action of various drugs.

ETHNOBOTANICAL CHARACTERISTICS AND FEED QUALITY INDICATORS OF FOOD PLANTS IN VETERINARY MEDICINE

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Keywords: Veterinary medicine, ethnobotany, fodder plants, feed quality indicators.

Personal livestock breeders and healers in different regions have mastered traditional treatments and methods that are useful in feeding, hygiene and treatment of animals, diagnosis and prevention through long-term experience, as well as data passed down from generation to generation. The study of the scientific basis of ethnobotanical character by collecting this information from local communities is relevant.

Livestock-one of the main occupations of the population in the Barda and Tartar districts-an important economic sector of the region. Ethnobotanical surveys were conducted mainly among the local population living around the Jayirli, Garadagli and Hajibeyli villages of Barda, Alasgarli, Bayandur, Zolgoran. Grazing villages of Tartar. Cattle grazing of large and small horned animals and horses in the pastures and grazing areas of both districts is carried out by the local population. The age limit ranged from 32 to 79 in the interviews with local communities (28 farmers). 9 plant species - *Cynodon dactylon* (L.) Pers., *Hordeum leporinum* Link (*Poaceae* Barnhart), *Malva parviflora* L. (*Malvaceae* L.), *Chenopodium album* L. (*Chenopodiacae* Vent.), *Mentha longifolia* (L.) Huds. (*Lamiaceae* Lindl.), *Allium sativum* (*Alliaceae* J.Agardh), *Asparagus officinalis* L. (*Asparagaceae* Juss.), *Brassica campestris* L. (*Brassicaceae* Burnett), *Cirsium arvense* (L.) Scop. were found. Plants are widely used in veterinary medicine. Some herbs are used for diuretics, deworming, inflammation of the eyes, the common cold.

Feed quality indicators of plants were determined by studying their chemical composition. *Cynodon dactylon* contains 10.2% protein by dry weight, 7.7% protein, 3.0% fat, 25.3% cellulose and *Chenopodium album* species - 11.7, 8.0, 2.7, 25.3 respectively; *Cirsium arvense* has 24.2% protein, which makes it a high-quality fodder plant.

ESSENTIAL OIL-BEARING PLANTS OF THE FAMILIES ASTERACEAE BERCHT. ET J. PRESL, APIACEAE LINDL. AND LAMIACEAE MARTINOV OF SOUTHERN AND CENTRAL PARTS OF LITTLE CAUCASUS

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The flora of Azerbaijan has a rich flora and contains about 5000 plant species, it is also very rich in useful plants. In recent years, extensive and in-depth research has been conducted in our country to study the biologically active substances, including essential oils, by collecting the gene pool of wild plants without damaging them. The role of essential oils in human life is great. Thus, they are widely used in the perfume and food industries, as well as in medicine.

In this study, essential oil-bearing plants from the families *Asteraceae* Bercht. et J. Presl, *Apiaceae* Lindl. and *Lamiaceae* Martinov, which are distributed in one of the botanical-geographical regions of Azerbaijan - in the southern and central parts of the Lesser Caucasus are reported.

According to research, in the Lesser Caucasus, 27 (0.54%) genera and 33 (0.66%) species of essential oil crops from the *Apiaceae* family, 25 (0.50%) genera and 43 (0.86%) species from of the *Asteraceae* family, 20 (0.40%) genera and 43 species (0.86%) from the *Lamiaceae* family. In the Central part of the Lesser Caucasus, from the *Apiaceae* family 19 (0.38%) species, in the southern part 8 (0.16%) species, from the *Asteraceae* family 23 (0.46%) and 14 (0.28%) species, respectively, from the *Lamiaceae* family 22 (0.44%) and 14 (0.28%), respectively, of the essential oil-bearing plant species are distributed.

The yield of essential oil in the aerial part of the plant, flowers, seeds, leaves and stems is 0.08-3.5% for the *Apiaceae* family, 0.01-2.5% for the *Asteraceae* family, and 0.03-3.0% for of the *Lamiaceae* family.

Keywords: Central and southern part of the Lesser Caucasus, *Asteraceae, Apiaceae, Lamiaceae*, essential oil-bearing plants.

BIOECOLOGY OF SPECIES *CENTAUREA* L.

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***Keywords: Centaurea*, bioecology, ecological group**

Studies have been conducted on naturally growing species with different habitats and adapted to environmental conditions. A number of scientists have studied the ecological characteristics of the genus. Species of *Centaurea* genus are found in all botanical and geographical regions of Azerbaijan.

Cornflower species are distributed in phytocenoses found in various mountain belts, different soil types, wide ecological amplitudes, different slopes, well-developed vegetation in Azerbaijan.

Due to the attitude to humidity, most of the cornflower species are xerophytic plants. These plants are distributed in well-lit areas with sunlight.

Mesophytes are also found. As is well known, xerophytic plants have different adaptations to use water sparingly. For example, in cornflowers, the appendages of the phyllary leaflets have become thorns, and the stems and leaves are covered with dense hairs, which weakens their transpiration.

Phyllary leaflets not only have a protective function during fruit ripening, but also play an important role in the process of dissimilation. Thus, the phyllary leaflets are hydroscopic, and depending on the humidity of the atmosphere, they open and close in turn. This feature is mainly characteristic of xerophytic species, as the anthodiums are opened in dry weather. In addition, the phyllary is important in the spread of the achenes.

Xerophytic species are mainly distributed in steppes and meadows, in special ecological environments. Regardless of the environment in which they live, there are differences in the structure of their achene and pappus, as well as their vegetative organs.

Many cornflowers have a variety of environmental factors and habitats. Species belonging to some *Jasea, Cyanus, Lopholoma* sections have adapted to live in shady places, forest edges, meadows; species belonging to *Acrolophus Phalolepis, Mesosentron, Tetramorphaea Calcitrapa* sections to the xerophilous ecosystem.

The influence of various environmental factors should be noted when studying the ecological characteristics of the cornflower.

According to the attitude to light, cornflowers are divided into 3 groups:

Heliophytes, heliosciophytes, sciophytes

The vast majority of cornflowers are heliophytes.

Species belonging to the genus are divided into three groups according to their attitude and adaptation to humidity: *mesophytes, mesoxerophytes, xerophytes*

Due to the abundance of nutrients in the soil, cornflowers are considered eutrophic and mesotrophic plants, as the vast majority of them are distributed in forests and steppes on black soils rich in humus and reserve nutrients and medium-nutrient soils. They are more common in calcareous soils, ie calciphyte.

According to the physical properties of the soil, five ecological groups have been identified: *calcipetrophytes, psammophytes, argillitephytes, species growing in gray soil in the forest, species that are not demanding according to soil type.*

SCIENTIFIC BASIS OF MEASURES FOR THE RESTORATION OF KARABAKH'S VEGETATION

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Keywords: plant ecosystems, restoration, monitoring, medicinal plants

Preliminary observations made after the brilliant victory in the 44-day war under the leadership of President of the Republic of Azerbaijan,Ilham Aliyev show that during the occupation, Karabakh was savagely looted and its vegetation was severely damaged. One of the important issues on the agenda now is the involvement of the liberated lands of Karabakh and other natural resources in the economic and social cycle. According to pre-occupation data, more than 2000 plant species were distributed in Karabakh. Among them were plants that were still rare at the time, as well as species with many beneficial properties. 606 species of these plants belonging to 110 families and 397 genera are medicinal plants, of which 35 species representing 19 families and 28 genera are Caucasian endemic. However, during nearly 30 years of occupation, unique forests have been cut down, vegetation in large areas destroyed, and plant ecosystems which formed over centuries, even millennia destroyed.In such a situation, there is a high probability that rare plant species will disappear completely from nature, that the range of many species will narrow, and that they will become rare and endangered. In such cases, the phytosociological relationship between phytocenoses and the species included in them is violated, the consequences of which can lead to unknown and unpredictable consequences that are harmful to the vegetation as a whole. In this regard, one of the primary tasks of botanists is to assess the current state of vegetation and plant ecosystems in Karabakh, to conduct such studies sequentially over several years and several times throughout the year in order to obtain objective scientific data and properly assess the situation. In this case, it is necessary to conduct such research several times for years or several times in a year in order to obtain objective scientific data and properly assess the situation. Only the results of such monitoringscalculated for a long time can provide a scientific basis for the proper planning and implementation of measures for the full restoration, preservation and efficient use of the vegetation of Karabakh.

RADIOLOGICAL RESULTS OF HYPER THERMAL WATER SOURCES IN KALBAJAR

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Keywords: *Mineral Istisu sources, radiation safety, radioisotope composition, total alpha and total beta activities, International Atomic Energy Agency, annual effective dose*

Summary

The work was carried out in accordance with paragraph 72 of the comprehensive field plan of the Coordination Headquarters in the field of transport, communications and high technologies "Radiological and radioecological research in the liberated territories" to address urgent issues in the liberated territories of the Republic of Azerbaijan.

The study examined the radiological properties of hyper thermal water sources in the liberated Kalbajar and Lachin regions, as well as the radionuclide content of the water, and discussed the results. The study determined the equivalent dose for the internal radiation received during the use of these waters. For the first time, the natural radioisotope composition of these waters was determined by gamma spectrometric methods with high resolution. Radiation safety of 14 mineral hyper thermal water sources in Kalbajar and Lachin districts was analyzed. No contamination with artificial radionuclides was detected in any of the analyzed

drinking water sources, and only natural radioactive isotopes were detected. Radionuclides such as Ra-226, Ra-228, U-238, U-234, U-235, Th-232 and K-40 were found in the analyzed waters with different activities. Changes in the total alpha and total beta activities of the taken water samples were found in the range of 0.18 ÷ 7.92 and 1.2 ÷ 30.4 Bq/L, respectively. According to the relevant normative documents of the World Health Organization (WHO) and the IAEA, it is determined that these waters, which are not suitable for permanent use in terms of radiation safety, can be taken temporarily for therapeutic purposes. For the first time, it was determined that the average annual effective dose received by the patient during the longest course of treatment from these waters due to radioactive elements in the water was in the range of 0.023 ÷ 0.035 mSv. As a result, it was determined that the annual effective dose limit of 0.1 mSv per person received by the WHO internal radiation was not exceeded.

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PROSPECTS FOR THE DEVELOPMENT OF VEGETABLE GROWING IN THE LIBERATED TERRITORIES

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After freeing some regional areas of Karabakh, we are going to carry out ecological approaches, like adaptively organic farming. For many years, this zone had stayed under Armenian invaders' feet. After free, it needs to be planted of these lands again. Agriculture and forestry have to meet the changing needs of Karabakh society both in terms of consumption and with regards to the environmental issues related to primary vegetable production. A deeper understanding of ecological principles is changing our perceptions on the functioning of primary vegetable and gardening production systems and will make it possible to use ecosystem services to benefit sustainable and resilient land-use systems without jeopardising profitability. This includes the interaction between plants and soils and ecosystem services.

The Karabakh where is the rich nature, there has been the greatest relief and climatic conditions for centuries. There are many types of climatic changes, which allows you to grow a variety of vegetables in these areas. The during the Soviet Union, the various vegetable crops had been grown on the territory of Karabakh for long years. It had been planted a lot of vegetable accessions in there, such as potato (*Solanum tuberosum L),* "Oqonyok", "Radomishsky","Nevski", "Sevinc", "Laymdota","Ukrainskiy rozoviy", "Filea", "Solara" and etc., and for summer planting of medium fast growing white cabbage (*Brassica oleracea)* had been grown numerous species, like "Yujanka 31", medium fast growing cauliflower (Brassica oleracea var. botrytis),"Movir 74","Qarantiya".

Except above, medium-term varieties of tomatoes are widely grown, for example, "Peremoqa 165", "Volqoqrad 5/95","Titan", "Utro" and so on., and also hot pepper (*Capsicum annium* L.)- ("Slonoviy xobot 304", "Goy-Gol") and sweet pepper *(Capsicum annium* L.Var grossum(L.) –("Novoqoshari","Podarok" and so on.).

Additionally, "Luqahsenko", "Dusti","Peshpazak" species of onion had also been cultivated.

Our aim is to cultivate many crops from Azerbaijanian National Genbank and to study their adaptabilitiveness in Karabakh.

Key words: cultivate, soil, vegetable, gardening, tomato, onion

PROSPECTS OF PRODUCTION OF ORGANIC AGRICULTURAL PRODUCT IN OUR REPUBLIC

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Keywords: environmentally friendly, pesticides, mineral fertilizers.

Global warming, air, soil and water pollution increase, the cultivation of ecologically clean agriculture, including fruits and berries, becomes a difficult task as the ecological situation on our planet worsens. Azerbaijan adopted the Law on Organic Agriculture in 2008, and later a number of normative legal acts in order to regulate these issues. The National Program for Environmentally Sustainable Socio-Economic Development in the AzerbaijanRepublic pays attention to the following two important conditions for such production:

- establishment of schemes for the use of chemicals in agriculture at the national and regional levels and strengthening control;
- prevention of the use of technologies that cause pollution and weakening of soils - the main means of production and biocosm of the biosphere.

Genetically modified organisms and their derivatives should not be used in the production of such products, only natural food additives allowed in international and national standards, sanitary and hygienic rules should be strictly observed, and the "from soil to table" principle should be taken into account. These products must be certified, have a natural shelf life, and contain no pesticides, mineral fertilizers, antibiotics, growth hormones, various preservatives, antioxidants, flavonoids, stabilizers, dyes, additives, or other additives of artificial origin. Environmentally friendly products do not become a source of danger to the human body and should be produced mainly on the basis of the following parameters:

- use of environmentally friendly raw materials and ingredients;
- application of environmentally friendly technologies.

It should be noted that the products produced in compliance with these parameters are environmentally friendly.

CHANGES IN HEMATOLOGICAL PARAMETERS AND INFLAMMATORY BIOMARKERS IN COVID-19 POSITIVE PATIENTS WITH MENTAL DISORDER

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To identify the high-risk population for severe COVID-19 and poor outcome is a crucial step for developing the effective strategy for prevention and control of COVID-19 outbreak. There is a growing concern that persons with mental disorder may have an increased risk for COVID-19 infection and tend to have high mortality rate. The limited and very controversial data are available until now in that respect. This paper presents the hematological findings obtained from a retrospective analysis of heath records of COVID-19 positive adult inpatients with mental disease at the Republican Psychiatric Hospital in Baku. The routine hematological parameters and inflammatory biomarkers (neutrophil-to-lymphocyte ratio (NLR) and systemic immune-inflammation index (SII)) were studied at the time of admission and discharge from the infectious disease department. The findings have shown that in the majority of cases the hematological parameters were within the reference ranges. At the early stage of disease, the neutrophilic leucocytosis was determined in 18.4% of patients. The absolute lymphocyte count was at the lower limit of the normal. At the same time, the high level of inflammatory biomarkers was registered in one third of woman and more than 40% of man. With disease progressing, an elevation of neutrophils was reported in 57.5% of patients. Also, the discrepancy between inflammatory markers was revealed: SII tended to increase, whereas NLR had a downward trend. The average count of platelets in most of the patients did not deviate from the normal, with a slight tendency to increase by the time of recovery from disease.The average ESR value at the onset of the disease and at time of recovery exceeded the reference range. The erythrocyte count and hemoglobin level, both at the time of the COVID-19 onset and during the recovery period, were below the reference norm. In the overall, the hematological findings are indicative of the mild to moderate inflammatory response to COVID-19 infection in patients with mental disorders.

Key worlds: COVID-19, mental disorder, hematological parameters, neurtophil-to-lymphocyte ratio (NLR), systemic immune-inflammation index (SII)

CHANGES OF DIHYDROPYRIMIDINASE-RELATED PROTEIN 2 IN THE SALIVA AND ITS NATURAL AUTOANTIBODIES IN THE SERUM OF HUMANS IN ANXIETY

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Nowadays it has been proven that 80% of aircraft disasters are related to the human factor, i.e. to the errors of airport operators. Taking this fact into account, one of the important problems of the modern life is undertaking timely, prompt, with application of exact and non-invasive technique evaluation of excitation and/or fatigue of humans working on such highly responsible positions.

The studies were carried out on patients prior to their surgery. Blood samples were taken from their veins; serums were saved and used as the first antibodies in the indirect ELISA-test. Dihydropyrimidinase-related protein 2 (DRP2), being in linear relations with serotonin (Mekhtiev, 2000), was used as an antigen at a concentration 20 μg/mL in 0.1 M Tris buffer (pH 8.6). Saliva samples were taken from the same patients and were used as antigens in the indirect ELISA-test. Healthy persons were used as a control group. In parallel, another series was carried out to determine cortisol level in the serum of these patients with application of the ELISA-test.

The results showed sharp (over 2.3 times) upregulation of natural anti-DRP2 autoantibodies in the serum of patients doomed to undergo surgery relatively to the healthy persons ($p<0.001$). Evaluation of cortisol level in the serum of these patients showed its significant upregulation relatively to healthy persons ($p<0.01$). Along with it, in the saliva of these patients significant downregulation of DRP2 relatively to healthy persons ($p<0.001$) was revealed**.** As levels of natural autoantibodies to different organism's proteins in the serum reflect the level of their antigens, sharp upregulation of natural anti-DRP2 autoantibodies in the serum of patients reflects upregulated serum levels of DRP2. Hence, as upregulation of cortisol in the serum of these patients was revealed, one can consider upregulation of DRP2 as a reliable marker of anxiety. Significant downregulation of DRP2 in the patents' saliva could be used as precise method of evaluation of human's anxiety.

Key words: platelets, serum, saliva, dihydropyrimidinase-related protein (DRP2), anti-DRP2 natural autoantibodies.

A RABIES VIRUS STRAIN ISOLATED FROM A DOG IN AZERBAIJAN: GENETIC, PHENOTYPIC AND PHYLOGENETIC CHARACTERISTICS

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Key words: rabies virus genome, molecular genetic analysis.

Background. The rabies virus is a zoonotic infectious disease that affects humans and all warm-blooded animals. According to WHO, more than 59.000 people die annually from rabies in more than 150 countries worldwide. While traditional methods of rabies diagnostics are still preferred, molecular diagnostics is becoming more popular. The advantages of these methods are their high sensitivity, specificity, speed, and safety.

Rabies has also been registered in Azerbaijan. Azerbaijan is an endemic area for rabies. Given the lack of data on the genotypic affiliation of the rabies virus isolated in Azerbaijan, we carried out molecular genetic studies of the genomes of field isolates of the rabies virus isolated in Azerbaijan, and also carried out a phylogenetic analysis of the virus genome using molecular methods.

Materials. Field isolates, rabies virus obtained from animals, as well as brain tissue samples from dead people with a positive test for FAT from various geographic regions of Azerbaijan were examined.

Brain homogenates (10% dilution in saline) were printed on Finders Technology Associates (FTA) cards. The cards were dried for one hour before sending the FTA. Samples for virus genome sequencing were sent to the Reference Laboratory of the International Epizootic Bureau of Rabies - Animal Health and Veterinary Laboratories Agency (AHVLA), UK.

Results. During the study period, 15 cases of rabies were reported. The highest incidence of rabies was registered in the city of Baku and its environs. The studied samples were obtained from dogs (n = 105), domestic (n = 47) and wild animals (n = 56), 4 samples from humans. Of the 189 samples tested, 115 samples were found to be positive, 55 were negative, and 45 samples were found to be ineligible by Reverse scanning PCR and fluorescent antibody ELISA.

Conclusions. Thus, the molecular genetics, phenotypic and phylogenetic analysis of the N gene fragments of the samples showed that they all belong to the cosmopolitan line of the rabies virus, which includes 3 subtypes.

PURIFICATION OF SEAWATER FROM PETROLEUM CARBONS WITH THE PARTICIPATION OF MICROORGANISMS AND ADSORBENTS

MİKROORQANİZM VƏ ADSORBENTLƏRİN İŞTİRAKI İLƏ DƏNİZ SUYUNUN NEFT KARBOHİDROGENLƏRİNDƏN TƏMİZLƏNMƏSİ

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Açar sözlər: neftlə çirklənmə, karbohidrogenoksidləşdirici mikroorqanizmlər, bioremediasiya

Dəniz neft yataqlarının istismarı və neft məhsullarının daşınması, dəniz nəqliyyatı Xəzər sularını xeyli çirkləndirir. Bu isə Xəzərin ekoloji şəraitində böyük gərginliyə səbəb olmuş, onun bir sıra sahil bölgələrində isə ekoloji böhran yaratmışdır.

Son illər iqtisadi cəhətdən əlverişli olan biotexnoloji yanaşmalara daha çox üstünlük verilir. Ekoloji tarazlığın qorunmasında mikroorqanizmlərin rolunun böyük olması müəyyən olunmuşdur. Məlumdur ki, sintez olunmuş preparatların demək olar ki hamısı mikrob destruksiyasına uğrayır.

Tərəfimizdən Abşeron yarmadasının Bakı buxtasının sahilyanı zonasında neftlə çirklənmiş suların neft və neft məhsullarından mikrobioloji üsulla təmizlənməsi istiqamətində tədqiqatlar davam etdirilmişdir. Bu məqsədlə neftə çirklənmiş dəniz suyundan mikroorqanizmlər ayrılmış, onların içərisindən aktiv karbohidrogenoksidləşdirici kulturalar seçilmişdir. Neftlə çirklənmiş dəniz suyuna aktiv karbohidrogenoksidləşdirən preparatlar fərdi və mikroorqanizm assosiasiyası, eləcə də müxtəlif adsorbentlərin olduğu biopreparat kompozisiyası şəklində daxil edilmişdir. Adsorbent olaraq bir neçə nümunə (saman çöpü, penoplast, torf, fındıq bitkisinin meyvəətrafı yarpaqları) götürülmüş, xüsüsi akvariumlarda biopreparatın optimal tərkibinin tapilması üçün işlər aparılmışdır.

Tədqiqatların nəticələrinə əsasən, qeyd etmək olar ki, maya kulturları, Azotobacter və müxtəlif karbohidrogenoksidləşdirici bakteriyalardan hazırlanmış assosiasiyalar yüksək karbohidrogenoksidləşdirici xassəyə malikdirlər (55-60%). Qeyd etmək lazımdır ki, istifadə edilən mikroorqanizm qarışığının destruksiya dərəcəsi yüksəkdir (60-81%). Eyni zamanda aparılan sınaqlar onu göstərdi ki, adsorbent olaraq torf və saman çöpünün istifadə edilməsi daha yaxşı nəticələr əldə etməyə imkan verir. Belə ki, bu adsorbentlərin yüngül və təbii tərkibə malik olması aktiv mikoorqanizm toplusunun fəallığını və suyun üzərində daha çox qalma ehtimalını artıraraq, neft və neft məhsullarının parçalanması prosesini asanlaşdırır.

Key words: oil pollution, hydrocarbon-oxidizing microorganisms, bioremediation.

The exploitation of offshore oil fields and the transportation of petroleum products, as well as sea transport, significantly pollute the waters of the Caspian. This caused serious tension in the ecological conditions of the Caspian Sea and created an ecological crisis in some of its coastal areas.

In recent years, more and more preference has been given to biotechnological approaches that are cost effective. It has been established that the role of microorganisms in maintaining the ecological balance is great. It is known that almost all synthesized drugs undergo microbial destruction.

We have continued research on microbiological purification of oil-contaminated waters from oil and oil products in the coastal zone of the Baku Bay of the Absheron Peninsula. For this purpose, microorganisms were isolated from oil-polluted sea water and active hydrocarbon-oxidizing cultures were taken from them. Active hydrocarbon oxidizing preparations in the form of separate and associated microorganisms, as well as biological preparations containing various adsorbents, were introduced into oil-polluted seawater. Several samples were taken as adsorbents (straw, foam, peat, hazelnut leaves), and work was carried out to select the optimal composition of the biological product in special aquariums.

According to the research results, it can be noted that yeast cultures, Azotobacters and associations prepared from various hydrocarbon oxidizing bacteria have a high oil oxidizing property (55-60%). It should be noted that the degree of destruction of the used mixture of microorganisms is high (60-81%). Tests carried out at the same time have shown that the use of peat and straw chips as adsorbents gives the best results. Thus, the light and natural composition of these adsorbents facilitates the decomposition of oil and oil products, increasing the activity of hydrocarbon -oxidizing microorganisms and the likelihood of their further stay on the for a longer time.

RESTORATION OF UNIQUE WATER SOURCES AND KAHRIZ CANALS IN THE LIBERATED TERRITORIES OFAGHDAM REGION.

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Keywords: kahriz, occupation, Aghdam, drinking water.

The relief of the Aghdam region, with an area of 1,154 km2, is mainly plain and partly ountainous. On November 20, 2020, 77.4% of the occupied territory of Aghdam region was liberated.

There were 47,700 hectares of irrigated land in the occupation zone of Aghdam region. These lands are irrigated by water taken from Khachinchay and Agdamkend reservoirs, Tartarchay Sag Sahil canal, Gargar river, canals, subartesian wells and with other water sources fed from Sugovushan hydro junction was provided.

The rivers in the region are transit. The relatively large rivers of the region are Gargar, Khachin and Gabarti rivers. The average annual water consumption of the Gargar River is

3.31 m3 / sec, and the average annual flow is 104.4 million m3. In Khachin and Gabarti rivers it is 2.83 m3 / sec and 88.0 million m3, 0.2 m3 / sec and 6.2 million m3, respectively. The density of the river network and their water reserves show that there is a great need for the efficient use of water resources in the region.

The Khachinchay reservoir, which was commissioned in 1964 and has a capacity of 23 million m3, provided irrigation water to 7,000 hectares of arable land. It halt has a capacity of 1.6 million cubic meters and the Aghdamkend reservoir, fed by the Khanlararkh canal, which was used draws water from the Gargarchay River.

Kahriz canals have been used since ancient times on import cones with rich groundwater reserves. There are enough Kahriz canals in the supply cones of the Khachin and Tartar riverstoday. Here for drinking and household water supply of the population there were 682 subartesian wells and 88 canals used. Today, Aghdam Kahriz canals have been completely liberated from occupation. For many years, these rare water sources have been subjected toatrocities such as human corpses, chemical waste and military ammunition (mines and artillery shells) thrown into wells.

Before owning kahriz canals, all kahriz canals in the district should be monitored. The results of the monitoring should be systematized according to the data collected from other sources in addition to the research, using maps of the geographical distribution of the canals. Then, on the basis of the design and estimate documents of the canals, technical conditions and professional staff should be created for the repair work.

Thus, taking into account the above factors, in addition to being a water infrastructure, Kahriz canals play an exceptional role in the creation of an ecosystem and the provision of clean drinking water.

PHOTOSYNTHETIC GAS EXCHANGE PARAMETERS IN LEAVES OF BREAD WHEAT VARIETIES EXPOSED TO DROUGHT AND REWATERING

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Abstract

The study of the physiological and biochemical processes occurring in higher plants under stress is of great importance to increase their tolerance to the effects of adverse environmental factors. In this purposes Gobustan and Tale 38 local bread wheat varieties with contrasting drought tolerance were used as the objects of the present research. Gas-exchange parameters (stomatal conductance, CO_2 concentration in the intercellular space, and transpiration rate) were measured using the Portable Photosynthesis System (LI-Cor Biosciences, Lincoln, USA) in leaf samples taken after drought and 7 days after rewatering. The earing and flowering phases were observed to start 8-10 days earlier in the Gobustan variety under stress compared to the watered variant and the Tale 38 variety. The earlier flowering, seed formation, and propagation of the plant under water deficiency is considered a physiological mechanism for avoiding drought. Higher stomatal conductance, photosynthesis, and transpiration rates occurred in the Tale 38 genotype compared to the Gobustan genotype under drought. In both genotypes exposed to drought, these parameters decreased. After rewatering they increased and recovered in the tolerant variety but this increase was slight in the sensitive variety. Under drought the concentration of CO_2 in the intercellular space decreased by 15% in the leaves of the Gobustan variety and after rehydration, this parameter increased by 10% reaching the control. In the Tale 38 variety 16% decrease was observed. However, the plant could not recover after rehydration and a decrease in the CO_2 concentration continued in the intercellular space. Thus, after the rehydration process the gas exchange parameters almost completely recovered in the drought-tolerant genotype, which manifested the dynamic self-recovery capacity of tolerant varieties. Based on the obtained results, the cultivation of the Gobustan variety is recommended in rainfed and semi-arid regions.

Keywords: drought, rewatering, gas exchange parameters

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GENETIC SCREENING

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Human, as a species, is very variable, and his variability is at the basis of his social organization. This variability is maintained, in part, by the chance effects of gene assortment and the variation in these genes is the result of mutations in the past. If our remote ancestors had not mutated we would not he here; further, since no species is likely to he able to reduce its mutation rate substantially by the sort of selection to which it is exposed, we may regard mutations of recent origin as part of the price of having evolved. We are here: all of us have some imperfections we would wish not to have, and many of us are seriously incommoded by poor sight, hearing or thinking. Others among us suffer from some malformation due to faulty development. A few are formed lacking some essential substance necessary to metabolize a normal diet, to clot the blood, or to darken the back of the eye. We will all die and our deaths will normally be related to some variation in our immunological defences, in our ability to maintain our arteries free from occlusion, or in some other physiological aptitude. This massive variation, which is the consequence both of chance in the distribution of alleles and variety in the alleles themselves, imposes severe disabilities and handicaps on a substantial proportion of our population. The prospects of reducing this burden by artificial selection from counselling or selective feticide will be considered and some numerical estimates made of its efficiency and efficacy.

Key words: genetic screening; mutation; genetic disease; diagnostics.

THE ALGEBRA OF 2D GABOR QUATERNIONIC OffSET LINEAR CANONICAL TRANSFORM AND UNCERTAINTY PRINCIPLES

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Abstract
The Gabor quaternionic offset linear canonical transform (GQOLCT) can be defined as a generalization of the quaternionic offset linear canonical transform (QOLCT). In this paper, we investigate the 2D Gabor quaternion offset linear canonical transform (GQOLCT). A new definition of the GQOLCT is provided along with its several impor-tant properties, such as bounded, shift, modulation, orthogonality relation, Plancherel and inversion formulas, are derived based on the spectral representation of the Gabor quaternionic offset linear canonical transform (GQOLCT). Moreover, we establish a ver-sion of Lieb's and logarithmic inequalities. Finally we will prove a type of the Heisenberg inequality by using local uncertainty principle.

Keywords: Quaternion algebra; Gabor transform; quaternion offset linear canonical transform; Gabor quaternion offset linear canonical transform; Lieb inequality;uncertainty principles;

AMS Mathematics Subject Classification: 42C30,43A30, 94A12.

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ECOLOGICAL STATUS OF SOME SPECIES OF FLORA IN THE TERRITORIES OF KARABAKHRELEASED FROM THE OCCUPATION

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The richness of the Karabakh lands is one of the reasons for the diversity of its biodiversity. The total forest area of the region is about 246,7 hectares, from them 13,197 ha is valuable, also makes up 42% of the Azerbaijani flora. There are 2 reserves and 4 sanctuaries in the region. Serious damage was also done by Armenian vandals to the environment. 7.2km^2 of forest fund around one field was damaged. Today 50% of forests have been destroyed, and the other 50% have become sparse according to satellite images, destroyed and looted everything: our cultural, historical and religious heritage, but did not succeed because we have returned to these areas. The area of Basitchay reserve is 107 hectares. 2 eastern poplars (diameter 350cm, height 30m, age 738 years and diameter 800cm, height 45 m, age 1638 years) were cut down and burned only in the territory of Hajili village. About 850 pine and poplar were cut down along the roadaround the Jabrayil city. Willow, pine and fruit trees near reeds were destroyed in the Zangilan district.

Human consciousness as a conscious species still does not fully understand the extent to which the well-being of its existence depends on the general ecological balance. However, even if brutally exploited and destroyed our natural resources, and we returned and construction and restoration work began in those areas. Currently, thousands of trees are being planted in these areas. The ecological condition of the liberated territories will be higher than before in the near future.

Keywords: deciduous forests, landscape diversity, rare and endangered plants

QURAQLIQ STRESİ ŞƏRAİTİNDƏ FLAQ YARPAĞIN QOCALMASININ HÜCEYRƏ MEMBRANININ DAVAMLILIĞINA GÖRƏ QİYMƏTLƏNDİRİLMƏSİ

EVALUATION OF FLAG LEAF SENESCENCE BASED ON CELL MEMBRANE STABILITY UNDER DROUGHT

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Xülasə

Buğda bitkisinin məhsuldarlığı əsasən abiotik və biotik amillərlə bağlıdır. Quraqlıq stresi hüceyrə membranının quruluşunu pozur, xlorofil miqdarının azalmasına səbəb olur və bu da yarpaqların qocalması ilə nəticələnir. Yarpaq qocalması, inkişafın son mərhələsi də daxil olmaqla tam inkişafdan bitki ölümünə qədər olan bəzi biokimyəvi və fizioloji proseslərdən ibarətdir. İlk üç yarpaq, xüsusilə ən üstdə olan flaq yarpaq, karbohidrat istehsalının mənbəyi kimi böyük rol oynayır. Bu işin məqsədi quraqlıq stresinin təsirindən flaq yarpaqların qocalması zamanı hüceyrə membran davamlılığı, nisbi su tutumu, yarpaq səthinin sahəsini, buğda genotiplərində normal suvarma və quraqlıq şəraitində öyrənmək idi. Flaq yarpağın əmələ gəlməsindən 7 gün sonra 6 nöqtədə ölçmələr aparılmışdır. Hüceyrə membranının davamlılığı yarpağın təbii və streslə müşayiət olunan qocalması zamanı fərqli olmuşdur. Tolerant Qırmızıgül genotipində həm suvarılan, həm də su çatışmazlığına məruz qalmış nümunələrdə membran keçiriciliyinin və nisbi su tutumunun miqdarı təxminən eyni olmuş, qocalmanın son dövründə isə hər iki variantda bu parametrlər flaq yarpaqlarda nisbətən aşağı olmuşdur. Həssas Tale 38 genotipində qocalma zamanı hüceyrənin membran davamılılğı quraqlıq stresinə məruz qalmış flaq yarpaqlarda suvarılan nümunələrlə müqayisədə 3 dəfə, həmçinin nisbi su tutumu 2 dəfə azalmışdır. Bunlarla yanaşı müşahidə olunmuşdu ki, Qırmızıgül genotipində quraqlıq stresinin təsirindən flaq yarpağın səthinin sahəsində suvarılan variantla 4 % , Tale 38 genotipində isə 15 % azalmışıdır. Beləliklə, flaq yarpaqlarda hüceyrə membranının davamlılığı, nisbi su tutumunun miqdarı və yarpaq səthinin təyin edilməsi

buğda genotiplərinin quraqlığa dözümlülüyünün qiymətləndirilməsi üçün test sistemi kimi istifadə edilə bilər.

Açar sözlər: Triticum aestivum L., quraqlıq, hüceyrə membran davamlılığı

Abstract

Decreased wheat productivity is mainly due to abiotic and biotic factors. Drought disrupts the structure of the cell membrane, leading to a decrease in the amount of chlorophyll, which results in leaf senescence. Leaf senescence consists of some biochemical and physiological processes, from full development to plant death, including the final stage of development. The first three leaves, especially the top flag leaf, play a major role as a source of carbohydrate production. We aimed to study the cell membrane stability, relative water content, leaf surface area during flag leaf senescence under normal watered and drought conditions in bread wheat genotypes with contrasting drought tolerance. Measurements were made at 6 points from the 7th day of flag leaf formation to the end of vegetation. In the tolerant Girmizigyl genotype, the dynamics of cell membrane stability and relative water content were approximately the same in both watered and drought-exposed variants, and in both variants, these parameters are reduced to approximately the same level to the end of ontogenesis. In the sensitive Tale 38 genotype, at the end of senescence, a 3-fold decrease occurred in cell membrane stability and a 2-fold decrease was observed in relative water content in drought-exposed flag leaves compared to watered variants. It was found that the flag leaf area decreased by 4% in the Girmizigyl genotype and by 15% in the Tale 38 genotype under drought compared to control variants. Thus, the determination of cell membrane permeability, relative water content, and leaf surface area in flag leaves can be used as a test system for the assessment of drought tolerance of wheat genotypes.

Keywords: Triticum aestivum L., drought, cell membrane stability

TƏŞƏKKÜR

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BIOLOGICAL DIAGNOSTICS IN AGROECOLOGY (ON GRAY-BROWN SOILS OF GOYCHAY REGION, AZERBAIJAN)

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Land resources occupy a special place among the natural resources of Azerbaijan. Goychay region has very suitable and unique lands for strategic agro-ecological monitoring. The gray-brown soils in this region are less studied than in other regions. The study of biological diagnostic indicators in comparison with other types of soils and in different seasons of the year is also considered an innovative approach. Biological diagnostics of natural cenoses suitable for cultivation and their involvement in agriculture plays an important role in the development of agroecology in the country. Biological diagnostics, environmental monitoring and assessment of these soils by modern methods are of great innovative importance for the development of agriculture in Azerbaijan. As a result of many years of agro ecology researchs, the involvement of natural cenoses in agriculture has created conditions for obtaining high productivity from these soils. Modern biological diagnostics considers the determination of flora and fauna in the studied soils as one of the most important factors in determining the type and subtypes of soil. Dark gray-brown soils are mainly represented by clayey varieties. These soils show signs of clay in the middle part of the profile in the B and B/C horizons. In the upper horizons (0-25 sm), the root system of plants and the activity of the biota contributed to the formation of an aggregated soil structure. There is a natural relationship between soil type and natural vegetation. The height of the bushes is from 80 cm to 150 cm, and the distance between them is from 1.5 m to 7 m. Gray-brown soils are characterized by a even distribution of silt fractions along the soil profile due to irrigation and flood waters. Erosion, tectonic processes, as well as sources influenced the formation of the terrain. Brown soils are intensively used in agriculture. Of particular importance is the study of the evolution of mountain forest brown soils as a result of anthropogenic impact. Agrocenoses of gray-brown soils are irrigated by the irrigation water of the Goychay River. The types of microscopic fungi isolated from river water used for irrigation are as follows: Trichoderma, Fusarium, Cladosporium, Scopulariopsis, Rhisopus, Mycelia sterilia. According to the floristic composition of the collected herbarium material, 50 plant species were found in natural cenoses. The study of invertebrate complexes in natural and civilized cenoses shows that the amount of mesofauna varies depending on cenoses. The characteristic ecogroups of the dominant and secondary invertebrate groups have been identified. Enzymatic activity was higher in agrocenoses.

Keywords: gray-brown soils, agroecology, microscopic fungi, agrocenoses, irrigated waters

GENETIC VARIABILITY, ASSOCIATION AND DIVERSITY STUDY AMONG THE SUNFLOWER GENOTYPES AT SEEDLING STAGE BASED ON DIFFERENT MORPHO-PHYSIOLOGICAL PARAMETERS UNDER POLYETHYLENE GLYCOL INDUCED STRESS

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Abstract

Drought stress directly affects growth along with productivity of plants by altering plant water status. Sunflower (Helianthus annuus L.) an oilseed crop, is adversely affected by biotic stresses. The present study was carried out to study the genetic variability and diversity among the sunflower genotypes at seedling stage based on different morph-physiological parameters under Polyethylene Glycol (PEG) induced stress. A total of twenty seven genotypes including two hybrids, eight advanced lines and seventeen accessions of sunflower (Helianthus annuus L.) were tested at germination and seedling stages in Polyethylene Glycol. Correlation and principle component analysis confirmed that germination percentage, root length, proline content, shoot length, chlorophyll content, Stomatal frequency and survival percentage are positively correlated with each other hence; these traits were responsible for most of variation among genotypes. The cluster analysis results showed that genotypes Ausun, line-2, line-8, 17559, 17578, Hysun-33, 17555, and 17587 as more diverse among all the genotypes. These most divergent genotypes could be utilized in the development of inbreed which could be subsequently used in the heterosis breeding.

Key words: Sunflower, drought, stress, polyethylene glycol

NEW METHOD OF ECO-GEOBOTANICAL ASSESSMENT OF SOIL-VEGETATION COVER

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The comparative assessment of soils is used as the initial stage of the assessment process in each assessment form. This approach was used in the eco-geobotanical assessment of the soil of Shirvan by the following scheme:

• I stage: bonitation of soils and their agro-industrial grouping were carried out on the basis of internal properties;

• II stage: an ecological assessment and grouping of soils were carried out;

• III stage: an eco-geobotanical assessment of the soil-vegetation cover was carried out using the indicators of the plant formations productivity and the ecological scores of soils within the landscape complexes.

The regularity of the variability of plant formations, depending on the composition of the soil cover. This pattern is manifested in the following communities:

✓ in soil and plant communities, distributed within alpine and subalpine meadows and meadow-steppe landscapes;

✓ in soil-plant communities of mesophilic, xerophilic forests, shrubs and dry mountain steppes;

✓ in agrophytocenoses.

For the first time, an eco-geobotanical assessment of the soil-vegetation cover was carried out at our research object. Two groups of criteria is proposed:

❖ Environmental scores obtained in the environmental assessment of soils;

❖ Productivity of plant formations in 3 groups of plants (cereals, legumes and motley grass)

The eco-geobotanical assessment of the soil-vegetation cover of Shirvan, expressed in balls and to distinguish eco-geobotanical groups: high, medium, low, very low yield.

The grouping of soils on the basis of estimated indicators should primarily contribute to the rational use and management of these systems on a scientific basis. So this method can also be applied in the territories of Karabakh liberated from occupation for economic rationality and scientific validity.

Keywords: eco-geobotanical assessment, vegetation, soil.

STUDY OF THE LEVEL OF SECONDARY METABOLITES INDUCED BY GLRAV-3 VİRUS İN GRAPE LEAVES

GLRAV-3 VİRUSU İLƏ YOLUXMUŞ ÜZÜM YARPAQLARINDA İKİNİCİLİ METABOLİTLƏRİN MİQDARININ TƏDQİQİ

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XÜLASƏ

Ən son ədəbiyyat məlumatlarına görə dünyada üzüm bitkisini yoluxduran 70-dən çox virus növü məlumdur. Üzümün virusla yoluxması zamanı nəzərəçarpan bütün əlamətlər virusun konsentrasiyası, bitkinin yaşı, ətraf mühit amillərindən asılı olaraq dəyişsə də demək olar çoxunda yarpaq, gövdə, giləmeyvəsində nekroz ləkələr, yarpaqların qıvrılması və s kimi simptomlarla müşayət edilir. Virusların törətdiyi xəstəliklər zamanı vizual dəyişiklərlə yanaşı bitki hüceyrələrində metabolik və struktur dəyişiklikləri də baş verir. Məlumdur ki, bitkilərdə ikinci sinif metabolitlər onların normal böyüməsi, inkişafında birbaşa iştirak etməyən üzvi birləşmələrdir ki, onlar da öz növbəsində bitkiləri patogenlərdən qoruyur. Bu baxımdan virus patogenezi zamanı fenollu birləmələr, tokoferollar, həll olan şəkərlər kimi üzvi birləşmələrin tədqiqi çox önəmlidir.İlk öncə Azərbaycanda üzüm bitkisində patogenlik törədən virus növlərini aşkar etmək məqsədilə müxtəlif regionlara fitopatoloji monitorinqlər təşkil edilmiş və qırmızı üzüm sortlarının yarpaqlarında əsas damarlar yaşıl qalmaqla damar aralarında qırmızı ləkələrin əmələ gəlməsi, yarpaqların kənarlarının aşağıya doğru burulması və s bu kimi Üzümün Yarpaq Burulması (Grapevine Leafroll Disease) xəstəliyinə xas olan əlamətləri daşıyan üzüm bitkilərindən yarpaq nümunələri toplanmışdır. Toplanmış üzüm nümunələri müxtəlif indikator-seroloji metodlarla (immunoxromato ELİSA (Agri Strip Magnetic), DAS-ELİSA) analiz olunmuş və nəticədə üzüm bitkisində dünya üzrə geniş yayılmış üzüm yarpaqlarının burulması virusu 3 (GLRaV 3) aşkar edilmişdir. GLRaV 3 infeksiyasının təsirindən üzüm bitkisində induksiya olunan fizioloji dəyişikliklərin tədqiqi mühüm əhəmiyyətini nəzərə alaraq virusla yoluxmuş üzüm bitkisinin yarpaqlarında ikincili metabolik birləşmələr olan fenollu birləşmələrin, tokoferolların və həll olan şəkərlərin miqdarı sağlam bitki ilə müqayisəli şəkildə tədqiq olunmuşdur. Məlum olmuşdur GLRaV-3 virusu ilə yoluxma zamanı üzüm bitkisində sağlam üzüm nümunələrindən fərqli olaraq tokoferolların miqdarı təxminən 2 dəfə artmışdır. Tədqiqatımız zamanı həmçinin yuxarıda qeyd edilən virusunun təsiri nəticəsində üzüm bitkisində fenollu birləşmələrin miqdarının 78,36-dan 132,46 mg/g –a qədər sağlam bitki ilə müqayisədə artması müşahidə edilmişdir. GLRaV-3 virusu ilə yoluxma zamanı üzümdə həll olan şəkərlərin miqdarının virusa yoluxmamış nümunələrdən fərqli olaraq 17,9-20 % artması məlum olmuşdur. Aparılan tədqiqatlardan belə nəticəyə gəlmək olar ki, üzüm bitkisində virus infeksiyası zamanı induksiya olunan fizioloji dəyişiliklər bitkinin infeksiyaya qarşı cavab reaksiyasıdır.

Açar sözlər: üzüm, GLRaV-3, metabolitlər.

ABSTRACT

Over 70 virus species are known to infect grapes in the world. Although all the notable symptoms of grape virus infection vary depending on the nature, concentration, age of the plant, and environmental factors, in most cases, symptoms such as necrosis spots on the leaves, stems, berries, leafroll, etc. occur. Virus-caused diseases lead to visual changes along with metabolic and structural changes in plant cells. It is known that secondary metabolites in plants are organic compounds that are not directly involved in their normal growth and development, which in turn protects plants from pathogens. In this regard, the study of organic compounds such as phenolic compounds, tocopherols, soluble sugars in the pathogenesis of the virus is very important. First of all, phytopathological monitorings were organized in different regions of Azerbaijan to detect pathogenic viruses in grape plants. Leaf samples of red grape varieties with symptoms characteristic of Grapevine Leafroll Disease, such as the formation of red spots between the veins, while the main veins remain green, rolled edges of the leaves downwards, were collected. The collected grape samples were analyzed by various indicator-serological methods (immunochromato ELISA (Agri Strip Magnetic), DAS-ELISA) and as a result, the most widespread grape virus in the world, Grapevine Leafroll Disease 3 (GLRaV 3) was detected. Given the importance of studying the physiological changes induced in grapes by the GLRaV 3 infection, the levels of phenolic compounds, tocopherols, and soluble sugars, which are secondary metabolic compounds in the leaves of infected grapes, were compared with those in healthy plants. It was found that during the infection with the GLRaV-3 virus, the amount of tocopherols in grapes increased by about 2 times, in contrast to healthy grape samples. A significant increase was also observed in the level of phenolic compounds and soluble sugars in virus-infected grapes compared to healthy plants. The results suggest that physiological changes induced during viral infection in grapes are the plant response to infection.

Keywords: grapevine, GLRaV, metabolites.

ASSESSMENT OF GLYCYRRHIZA URALENSIS FISCH EX DC POPULATIONS IN LOWLAND KARABAKH

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One of the urgent problems is the comprehensive study of useful plant resources and the current state of priority species. Glycyrrhiza L.- medicinal plant(G.glabra,G.uralensis) and present inAzerbaijanfloraby 5 species: Glycyrrhiza glabra L., G.echinata L., G.aspera Pall., G.macedonica Boiss. et Orphand, G.uralensis Fisch ex DC (=G.glandulifera Willd et K.).
The phytocenological situation of G.uralensis species in the Lowland Karabakh zone (Tartar, Barda, Goranboy districts) was studied, the type of vegetation in 11 selected populations, the composition of associations were determined, cenopopulations (CP) was assessed. The number dynamics and efficiency of plants in tranches built on sites located in different phytocenoses were studied. 5 of them were implemented in 2020, 6 in 2021. Materials were collected from different phases of ontogeny by the generally accepted method. The size of the experimental areas -50x50, the number -10-100.The efficiency (ω = 0.71; 0.73)of 4 and 5 CPs are high in the 2020.
Both CP have a small number of individuals in the pre- (j = 0) and post-generative(s,ss = 0-4) phases. The efficacy of 1, 2, and 3 populations is low (ω = 0.28–0.31) because of the large number of individuals in the pre- and post-generative phases. The 1st, 2nd and 3rd populations are considered young (Δ=0.36-0.44) according to the age index the others are considered adult populations (Δ=or older 45). The predominance of individuals in each CP cycle was selected in 2021. So it may lead to plant extinction in future populations. The main reason for this is the

Keywords: population, phytocomplex, age index, efficacy index, Glycyrrhiza

EPIDEMIOLOGYCAL CHARACTERISTICS OF CHILDHOOD CANCER IN SUMGAYIT CITY

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ABSTRACT

Every year, 15 out of 100,000 children in the world are diagnosed with cancer. In economically developed countries, malignant neoplasms rank third in the structure of infant mortality after accidents and injuries. In the structure of malignant tumors in children, in contrast to adults, more leukemia, lymphomas and tumors of the central nervous system predominate. In general, solid tumors account for 40% of malignant tumors in children.

The epidemiological situation of malignant tumors in children in Sumgayit was assessed on the basis of calculations based on report forms 7 of the "Report on Malignant Tumors" approved by the State Statistics Committee of the Republic of Azerbaijan on the following indicators: extensiveness indicator (%), intensity indicator (per 100,000 population), a standardized morbidity rate (per 100,000 population), prevalence rate (per 100,000 population). These indicators were calculated using the methodology recommended by the WHO.

In Sumgayit, in 2020, the prevalence of pediatric oncological diseases in the morbidity structure of malignant tumors was 2.9% among boys and 1.1% among girls. The intensity indicator of the disease was 2.3 times higher in boys than in girls and was 10.7 and 4.7 per 100,000 population, respectively. During the study year, when calculating the prevalence rate of oncological diseases in children, it was determined that this figure is 7.6 per 100,000 population. This figure was 10.5 for boys and 4.6 for girls. The standardized morbidity rate was found to be high in both boys and girls in the 15-17 age group (8.80 and 3.10 per 100,000 population respectively).

Thus, during the study period, the incidence of malignant tumors among children in Sumgayit was higher than among boys and girls. The highest morbidity rate was recorded in the 15-17 age group.

Key words: childhood cancer, pediatric oncological, intensity indicator.

NEW AND RARE PLANTS OF KARABAKH FLORA

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Karabakh regionis located in the southeastern part of the Lesser Caucasus. The climate in most of the territory is moderately warm with dry winters. Forests and shrubs occupy over 32% of the territory of the republic. Differs in rich flora and fauna. This wealth has been destroyed by the Armenian occupiers since 1993, and these forests were ruthlessly seized, cut down and used in furniture production.

In the spring of 2021. we have noted some decorative, economically valuable, as well as rare, endangered and endemic plants. Such as: Primula macrocalyx Bunge, Bongardia chrisopogon (L.) Boiss., Gentiana angulosa Bieb., Geranium tuberosum L., Globularia trichosanta Bieb., Tulipa karabachensis Grossh., Ophrys caucasica (Xarı bülbül), İris reticulata Bieb., Centaurea karabachensis (Sosn.) Sosn., Astragalus zangelanica Grossh., A. schuchaensis Grossh., Alcea sachsachanica Iljin., Onobrychis schuschaensis Agaeva and some other plants in the world are found only on the territory of Karabakh, including in Zangilan. In May 2021, we discovered a new species - Orchis punctulata Stev. ex Lindl. Occurs in meadows, forest edges, in thickets of bushes, on gravelly slopes in mountains at an altitude of 400-700 m above sea level. Listed in the Red Book of Russia - category III (rare species). This species is also found in Azerbaijan on the territory of the Nakhchivan Autonomous Republic.

Ophrys caucasica Woronov. an endemic species of the Caucasus. The species is listed in the Red Data Books of Azerbaijan, Russia and Krasnodar. Distributed in Azerbaijan. Samur-Divichi, Kur-Araz, Kur plain, Absheron, Lesser Caucasus. Up to the middle mountain zone, along the edges, in bushes, on grassy slopes, among rocks. Abkhazia (Tsebeldy) is described. Overgrazing, collection of inflorescences and digging out of tubers suffers. It is necessary to strengthen the protection of the population and introduce culture. In order to protect this rare plant species, the introduction began (Institute of Dendrology of ANAS). The seeds were brought from Shusha, Khojavend and Zangilan. We carry out phenological observations.

Keywords: vegetation, endemic, new species, Karabakh, Zangilan

NUTRITIONAL COMPOSITION AND BIOACTIVE MOIETIES OF CARROT BY-PRODUCT WITH SPECIAL REFERENCE TO ITS HEALTH PERSPECTIVES

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Abstract

Carrots are one of nature's most appealing and delicious roots, as well as being quite nutritious. Carrots and their by-products are high in bioactive compounds and have a broad antioxidant spectrum. Polyacetylenes, flavonoids, vitamins, carotenoids, and minerals are abundant in carrots and their by-products. Functional and nutraceutical composition of carrots serve as anti-carcinogens, antioxidants, and immune enhancers, proving the adage that carrots are safe for the eyes. Carrot has also been shown to have cholesterol-reducing, anti-diabetic, anti-hypertensive, reno protective, hepato-protective, and wound healing properties. Carrot seed extracts also have antibacterial, cardio and hepatoprotective, anti-inflammatory, antifungal, and analgesic properties. Owing to the rich source of various nutrients carrot by-products have promising potential for the development of functional products (cake, bread, biscuits). The present review describes the functional and nutraceutical composition of carrot by-products and also highlights the uses of carrot by-products for the development of various functional food products along with the recent updates on the subject.

Keywords: Carrot, Bioactive Moieties; Health Perspectives

PRELIMINARY MYCOLOGICAL ANALYSIS OF THE LANDS OF THE LIBERATED CITY OF SHUSHA AND LACHIN CORRIDOR OF AZERBAIJAN

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The purpose of the presented work was devoted to the estimation the number and species composition of mycobiota of soil samples taken in September 2021 from different areas of the liberated city of Shusha and Lachin corridor of Azerbaijan.
From result of the analysis of the total number of 20 soil samples taken in liberated areas of Shusha and Lachin became clear that although the mycobiota of the soils of Shusha is slightly higher in number than in the soil samples taken from the Lachin corridor, but it is not so high for the autumn season in general. Thus, the average number of fungi in the soils taken from different areas of Shusha is 2,200 CFU /gr, and in the soils taken from the Lachin corridor, this figure is 1,900 CFU /gr. For comparison, can note that for the lands of the Absheron Peninsula, this figure takes 3800 CFU/ gr, in the Ganja-Gazakh economic region 4100 CFU/gr, and in the Guba-Khachmaz economic region 9100 CFU/gr.
From the analysis of mycobiota by species composition of the soil samples taken, became clear that the mycobiota of both Shusha and Lachin corridors is generally poor. About 200 pure cultures have been obtained from soil samples taken so far, which were determined that they belong to 37 species. For comparison, can note that in our research in different areas of Azerbaijan this figure ranged between 47-70 species. The interesting thing is that, species such as Aspergillus flavus, Mucor hiemalis and Penicillium cyclopium are dominant in the mycobiota of soils of the liberated areas, while Trichoderma hamatum characterized as a frequency of occurrence of random species. Thus, the first 3 fungi are characterized by the synthesis of metabolites with strong toxic effects, and the last fungus is characterized by both antagonistic attitude to phytopathogens and high sensitivity to anthropogenic pollution.
Thus from the carried out of research became clear that since the analysis of soil samples taken from the liberated city of Shusha and the Lachin corridor is accompanied by both quantitative and qualitative changes, it is necessary to study these changes in more depth and comprehensively.

Keywords: soil, mycobiota, number and species composition

FRACTURE BEHAVIOUR OF LONG FIBER REINFORCED GEOPOLYMER COMPOSITES

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Abstract

Nowadays, geopolymers are considered as an environmentally friendly alternative for Portland cement. They have a lot advantages such as high compressive strength or high resistance for corrosive environment. They also have some limitations; one of them is their relatively low fracture toughness. This limits the use of geopolymeric materials in many areas, including construction. The main objective of the study is to analyze the structure and mechanical properties in terms of the cracking mechanics of geopolymer composites. Geopolymer composites based on fly ash or metakaolin with fine aggregate and river sand. They were reinforced with three types of reinforcement: glass, carbon and aramid fiber in a volume ratio of 0.5%, 1.0% and 2.0%. The main used research method was bending strength tests in accordance with the European standard EN 12390-3. The specimens were investigated in three different temperatures ca. 3 ^{0}C, 20 ^{0}C and 50 ^{0}C. In addition, an analysis of the morphology of the fibers was performed on the basis of photos taken from an electron microscope. The results show that the addition of fibres significantly improved the bending strength properties. The reinforcement with aramid fibre in the amount of 2.0% resulted in more than a 3-fold increase in strength compared to the reinforcement-free composites at ambient temperature. The results in 50 ^{0}C shows a significant decrease in the bending strength for almost all composition, which is unexpected results taking into consideration the fact that geopolymers are described as materials dedicated to work at high temperature. The test in low temperature - 3 ^{0}C shows increasing the bonding strength for almost all compositions.

Keywords: geopolymer composite; fiber reinforcement; long fiber

OBTAINING OF GYPSUM WASTE BASED FERTILIZERS

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Solid industrial and domestic wastes pollute the environment surrounding us. Environmental pollution is becoming more and more noticeable. In addition, they can be a source of harmful chemical, biological and biochemical agents entering the natural environment. This poses a certain threat to the health and life of the population, as well as future generations, and disturbs the ecological balance. One of the most important issues to be addressed today is how to effectively manage food waste. The collection, transportation and recycling of food waste must be managed in a comprehensive manner. The use of agricultural waste as a fertilizer or reclamation tool, for example, ammonium sulfate $(NH_4)_2SO_4$, production of valuable chemical fertilizers from phosphogypsum, as well as the development of lime for chemical reclamation of salt-soil areas have been considered. Lime ameliorants have been obtained from wastes of metallurgy, paper, leather and other industries. Processing of solid waste and production of organic, mineral fertilizers are environmentally safe and do not require significant energy and capital costs [1, 2].
Research work has been carried out on the utilization of gypsum waste. It has been proposed to produce granular multicomponent fertilizers containing N, S, CaO and MgO using these wastes. Waste gypsum has been enriched with dolomite or magnesium sulfate. At the same time, solid food waste has been used. Urea has been added to the fertilizers as a nitrogen source and NSCaMg has been obtained. The results of the experiments made it possible to obtain the fertilizer consisting of 38% MgO and characterized by 3.8% N; 7% S, 14% CaO and appropriate physical properties.

Keywords: gypsum wastes, utilization, fertilizer.

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CLINICAL AND MORPHOLOGICAL ASPECTS OF MALIGNANT SOFT TISUE TUMORS.

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According to the World Healh Orgnization (WHO), the group of soft tissue sarcomas includes more than 100 different histological subtypes. The material for this study was a group of patients with malignant tumors of soft tissues who underwent examination and treatment at the AMU oncology Clinic. For the purpose of study were selected 129 (100%) patients with malignant tumour of soft tissues. In the study group of patients, the proportion of men was 71 (55,0±4,4%), women 58 (45,0±4,4%). In our study, according to histological affiliation patients were distributed as follows: malignant fibrous histiositoma 51 (39.5±4,3%) patients, liposarcoma 29 (22,5±3,7%) p/s, synovial sarcoma 15 (11,6±2,8%) angiosarkoma 12 (9,3±2,6%) p/s, malignant schwanomas 9 (7,0±2.2%)p/s, leyomiosarkoma 6 (4,7±1.9%) p/s, fibromiksosarkoma 4 (3,1±1,5%) p/s, rabdomiosarkoma 3 (2.3±1,3%) patients. The most common reason for initial visit to a medical institution was palpable tumor (100%). The main method of radical treatment of both primary and recurrent malignant soft tissue tumors was surgery intervention. The frequency of mitosis, morphological characteristics of the cell nucleus, cellular anaplasiya and polymorphizm and the the presence of necrosis are the most important factors determining the degree of malignancy. All patients underwent an immunohistochemical examination. İt was found that in malignant tumors of soft tissues in the pathological focus, there is an increase in the size of coagulation necrosis, an increase in the number of new forming vessels. İt was determined that histodifferentiation of tumour is in inverse correlation with expression CD31 receptor. That is as high the degree of histological differentiation of tumour as low the level of expression CD31 receptor (χ^2=35,4; p<0,001; p=-0,322). In FHTof ST is exposed inverse dependence between expression CD31 endotelial cells with spontaneous necrosis and lymphoid infiltration. As more the size and foci of spontaneous necrosis (χ^2=67,1; p<0,001; p=-0,473) and lymphoid infiltration (χ^2=46,1; p<0,001; p=-0,346), as low the level of expression CD31 receptor. It was found that the high level of espression CD31 receptor is in direct correlation with metastasis (χ^2=18,6; p=0,42; p<0,001) and recurrence (χ^2=9,43; p=0,30; p<0,01) of the process.

To establish the correct diagnoses and choose the optimal treatment tactics for suspected soft tissue tumors, multidisciplinary approach should be used with the participation of a specialist in radiation diagnostics and a pathomorfologist, as well as an oncologist surgeon, chemistry terapevt and radiologist.

THE PECTIN CONTENT OF PRUNELLA VULGARIS L.

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In folk medicine, the range of P. vulgaris applications is quite wide. The plant is used as a biological stimulator that activates the antimicrobial reaction of the body, as a hemostatic in nasal bleeding, in diseases of the eyes (conjunctivitis) and upper respiratory tract (angina, bronchitis, laryngitis, diphtheria), colds, kidney diseases, even in malignant neoplasms and as an appetite-inducing plant. The herb of the plant is also used for hypertension, thyrotoxic goiter, edema of different etiologies, diarrhea, rheumatic polyarthritis, stomatitis and as a clay agent.

Biochemical studies have shown that the aboveground part of P. vulgaris is characterized by a high content of pectin substances. P. vulgaris pectin substances are mainly represented by protopectins. The largest accumulation of pectins differs in plant leaves (0.98-1.49%), rarely - reproductive organs (up to 1.47%). Protopectins are present in significant quantities in reproductive organs (8.35-10.05%), leaves (7.32-10.12%) and in stems (6.50-8.21%). Pectins in the aboveground mass of P. vulgaris are 5 times less than protopectins.

Analyzing in different phenological phases of development, it should be noted that the content of pectins in the above-ground part remains unstable. According to the ratio of pectin substances and protopectins, the investigated organs of the plant practically do not differ.

The content of pectins during the formation of seeds in inflorescences decreases sharply by 0.61%. In the butonization phase and the beginning of flowering, the content of protopectin increases in inflorescences and stems. In leaves, the content of pectins in the flowering phase varies from 1.48% to 2.73%, reaching the highest content. In reproductive organs 0.61-1.46% stems their number is lower and makes 0.33-0.96%.

Keywords: Prunella, polysaccharides, pectin

EFFECTS OF HIGH SALT CONCENTRATIONS ON FUNCTIONAL CHARACTERISTICS OF MAIZE CHLOROPLASTS

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Changes occurring in the activity of photosystems (PS I and PS II) under the influence of high NaCl concentrations (1%, 2%, 3%) on chloroplasts of the maize plant (Zea mays L.) have been studied. Subcellular fractions of mesophyll and bundle sheath cells were isolated using differential centrifugation based on the Gardestrom and Edwards (1983) method. Photochemical activities of PS I and PS II in chloroplasts of mesophyll (M) and bundle sheath (BS) cells isolated from maize leaves were measured using the polarographic method based on the release or absorption of oxygen. According to the results of the study, the activity of PS II was 76 μmol $O_2 \cdot mg^{1}$ chlorophyll$\cdot s^{-1}$ in chloroplasts isolated from mesophyll cells, while in chloroplasts isolated from bundle sheath cells it amounted to 14 μmol $O_2 \cdot mg^{-1}$ chlorophyll$\cdot s^{-1}$. Thus, the activity of PS II was 5 times less in the bundle sheath cells compared to the mesophyll cells. The activity of PS I was 219 μmol $O_2 \cdot mg^{1}$ chlorophyll$\cdot s^{-1}$ in chloroplasts isolated from mesophyll cells, while in chloroplasts isolated from bundle sheath cells it was equal to 617 μmol $O_2 \cdot mg^{-1}$ chlorophyll$\cdot s^{-1}$. As can be seen, chloroplasts of the bundle sheath cells are richer in PS I than those of the mesophyll cells.
Studies have found that the activities of PS I and PS II differ significantly in chloroplasts isolated from the assimilating mesophyll and bundle sheath tissues of leaves of the NADP-type C4 plant- maize.

Keywords: Zea mays, photosystem, mesophyll, bundle sheath, salt stress

DIAGNOSIS OF CIRCULATING CONCENTRATIONS OF HUMAN GROWTH HORMONE (HGH) AND INSULIN-LIKE GROWTH FACTOR (IGF) BEFORE THE INFECTION WITH COVID-19 AND RISK OF DEATH

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The Covid-19 pandemic is a worldwide pandemic that has spread from China to almost every country on the planet in just a few months. An overview of the epidemiological spread of the disease on the planet has raised a number of questions, and answering these questions has helped to understand the behavior of the virus and, in turn, to limit the spread of the virus and reduce morbidity and mortality. A growth factor is a group of proteins that stimulates the growth of specific tissues. Growth factors play an important role in cell differentiation and cell division, and they are present in many organisms. In humans, after the age of 30, a progressive decrease in growth hormone secretion by 15% occurs every ten years. Growth hormone deficiency is a common factor for all vulnerable patients, and the study of the role of growth hormone in the unique epidemiological form of Covid-19 is considered important in helping the patient in the early stages.

Insulin-like growth factor 1 - belongs to the family of insulin-like growth factor-binding proteins, and it is similar in structure and function to insulin. It is involved in the processes of growth and development, the differentiation of cells and tissues of the body. IGF-1 has a polypeptide chain structure consisting of three internal trimolecular disulfide bridges from 70 amino acid residues. The molecular mass of IGF-1 is 7.6 kDa. It is considered that this protein is actively involved in the building processes of the body. Coronavirus disease suddenly worsens primarily in overly inflammatory lesions, but insulin-like growth factor -1 (IGF-1) is involved in the endocrine control of the immune system. However, the effect of IGF-1 levels on COVID-19 prognosis remains unknown. Using Bio Bank's reserves, British scientists have studied the link between the IGF-1 cycling concentration and the risk of death among COVID-19 patients. Especially, IGF-1 levels were determined by taking preliminary measurements in blood plasma in 2006-2010. According to the results of the analysis, 415 out of 1670 COVID-19 patients died of COVID-19. Compared to the concentration of the lowest quartet of IGF-1, the highest quartet was associated with a 41% lower risk of death. This connection has been consistent in many different analyzes, i.e. higher IGF concentrations are associated with lower mortality risks. The path to the determination of IGF-1 concentration may improve the prognosis of COVID-19.

Keywords: COVID-19, IGF-1; GH, immune system, risk factors

CREATION OF A DIGITAL SOIL MAP OF AZERBAIJAN (1: 500,000) USING GEOINFORMATION TECHNOLOGIES

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The purpose of the work is to compile a digital soil map at a scale of 1: 500,000 in accordance with the requirements of the UN Global Soil Partnership (GSP) program. Using the methods of GIS technologies and Remote Sensing, the distribution areas of the main soil taxonomic units have been updated and diagnostic data bases have been created. As a result of the scientific analysis, the legend of the soil map was compiled in accordance with the international soil classification.

The objects of research are the soil cover of the Republic of Azerbaijan.

The development of geoinformation technologies and new methods of digital cartography, a variety of satellite imagery materials open up opportunities for creating new generation medium-scale maps (McBratney et al., 2003; Hartemink et al., 2008; Grunwald, 2009; Minasny and McBratney, 2016).

Work on the introduction of digital technologies into production shows a qualitative reduction in cost and an increase in the speed of mapping in the face of reduced opportunities for obtaining new field data (MacMillan et al., 2008).

The work is devoted to the creation of a digital soil map (scale 1: 500 000) of Azerbaijan. Based on the results of long-term soil expeditions, a geospatial analysis of soil-geographical data was carried out using GIS technologies and remote sensing methods. As a result of the conducted research, for the first time, a fundamentally new digital soil map of Azerbaijan was created and for each cartographic unit, databases of soil indicators were compiled in the form of attributive data. Compared to existing paper soil maps, the new digital soil map more accurately reflects the current state of soil cover. The digital soil map database contains information on soil diversity; their distribution, relief, climate, vegetation, morphology, humus content, gross nitrogen, C:N ratio, soil reaction, cation exchange capacity, granulometric composition. The name of the soils is given according to the International Soil Classification system in compliance with the Reference Base for soil resources (WRB) 2015. The map reflects 56 subtypes of natural soils, 29 subtypes of anthropogenically modified soils, 6 geological formations.

When compiling a digital soil map based on new technologies, it is necessary to use traditional methods of cartography. For this purpose, when creating a digital soil map, fund materials were used, including the soil map of Azerbaijan (1: 500 000, 1957) and materials of new soil research. As a result of this study, a soil-geographic database of soil data was created, which is necessary for the creation of more detailed, large-scale soil maps, including a soil map of the liberated territories.

Keywords: international soil classification, digital soil mapping, remote sensing.

THE RISK MODELS OF EARLY POSTOPERATIVE COMPLICATIONS IN ESOPHAGOPLASTY FOR CANCER

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To create risk models for early postoperative complications in esophageal surgery for cancer, the results of surgical diseases in 61 patients were analyzed. Of these, 24 (39.3%) were early postoperative complications (from the side of the anastomosis, cardiopulmonary and thrombotic complications).

The analysis of patients with postoperative complications showed that a statistically significant increase in the risk of complications and postoperative mortality was observed in patients at a late stage of the tumor (persistent dysphagia, severe emaciation), high infiltration of the esophageal wall, low differentiation of cancer cells, persistent dysphagia, severe emaciation, low hemoglobin in blood (Hb) and total blood protein (TP), advanced age, as well as the presence of concomitant diseases and the onset of immediate postoperative complications (anastomotic rupture, anastomotic necrosis, cardiopulmonary and thrombotic complications).

The prognosis of the likelihood of complications was determined using the following mathematical model:

$$P = 3.89 – 0.018\ Hb – 0.0259\ TP$$

where, P is the probability of recovery, Hb is the amount of Hb upon admission to the hospital, TP is the total blood protein. The accuracy of this model was found to be 90.16%.

Keywords: Tumor, dysphagia, esophageal surgery, risk models, postoperative complications

COMPARATIVE ANALYSIS OF CLOSE OUTCOMES OF TOTAL MESORECTAL EXCISION IN MALIGNANT DERIVATIVES

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Abstract. Laparoscopic total mesorectal excision (TME) in malignant masses of rectum with different localization is going spread widely over the world. But, the final point was not put to the issue of open or laparoscopic operations. At present, close results of laparoscopic and open TME are analyzed in research work.

Material and methods. Clinical materials of state medical institution (Clinical Medical Centre) and private medical centre (Elmed medical centre) were used in research work. 47 of 103 patients with the diagnosis of cancer of rectum were included in laparoscopic group, 56 of them were included in open group. Patients underwent to general clinical examinations, MRT of pelvis, CT examination of chest and abdomen, colonoscopy (biopsy), CEA, determination of C19-9 tumor markers, etc.

Result and discussion of research. The continuation period of operations was expressed with high figures in patients included in laparoscopic group during our comparative analysis (330±60 minutes and 275±35 minutes). Laparoscopic technology preferred to open operations in other images. The quantity of blood lost during operation was 245±135ml in laparoscopic group, 340±145ml in open group, need for narcotic analgesics was 66.5±1.8mg in laparoscopic group, 115.4±2.4mg in open group, commencement period of intestinal peristalsis was 32.8±1.5 hours in laparoscopic group, 61.2±1.8 hours in open group, enteral nutrition was 47.5±2.4 hours in laparoscopic group, 69.7±3.8 hours in open group, the first defecation was 4.7±1.1 days in laparoscopic group, 5.9±1.3 days in open group, total days for staying in stationary and postoperative ward days were 18.5±4.7 days in laparoscopic group, 22.4±5.6 days and 13.14±4.2 days in open group.

Keywords: Laparoscopic TME, open TME, duration of operation, intraoperative blood lost, first defecation, drug analgesic

NERVE CONGESTION IN THE ABDOMINAL AND PLEATED DUCTS OF THE FLAT BOWEL SOME ASPECTS OF SURGICAL CLASSIFICATION

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Introduction. In the course of TME, both laparoscopic operations and the ability of the vegetative nerve elements to detect both conscious and unconscious (for the protection of oncological principles) are likely. Damage occurs both in sympathetic fibers and parasympathetic fibers, which ultimately leads to urogental disorders.

Material and methods. Observations were performed based on the diagnosis and treatment of 145 patients diagnosed with flat gastric cancer and endoscopic polyps. Patients are divided into two groups: 1) Laparoscopic group - 69 patients; 2) Open group - 76 patients. Clinical examination of patients, general analysis of blood and urine, blood biochemical analysis, CT scan of breast and abdominal cavity, MRT of small bowel, R-epophilia of the chest, colonoscopy (biopsy), definition of oncomers in the blood (CEA, CA 19-9) p. inspections were carried out. Nerve injuries were examined as a result of surgical and postoperative clinical analyzes (7 days and 6 months postoperatively).

Discussion. According to literature data and personal observations, anatomical and clinical classification of nerve injuries during TMJ was performed. The damage and the severity of the lesions were attempted to interpret every damaged clinical symptom as NI-1, NI-2, NI-3, NI-4 and NI-5.

Result. We believe that the classification reflecting nerve damage in TME will pay great attention to the theoretical and practical point of view, will be one of the additional guiding forces during operations.

Keywords: Autonomous nerves, nerve resins, upper lesions, low lesions, despunction of pelvic organs, classification of nerve injuries

PROGNOSTIC ACCURACY OF THE EXTRACELLULAR HISTONES FOR LIVER DYSFUNCTION AFTER DONOR HEPATECTOMY

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Abstract

Introduction. Considering the lack of a standardized definition of liver failure after liver resection we hypothesized that the quantitative measurement of extracellular histones level is a promising new biomarker for the prediction of liver dysfunction after donor hepatectomy.

Material and methods. 86 living donors who underwent right hepatectomy were considered for this prospective study. Blood samples of donors were collected on postoperative day 1 and histone levels in the plasma samples of the patients were measured with Total Histone H3 sandwich ELISA kits.

Between patients 23 (26.7%) were deemed to have a delayed liver function recovery according to the definition of post-hepatectomy liver failure by the International Study Group of Liver Surgery, while 63 (73.3%) were considered to have an adequate liver function recovery.

Results. Extracellular Histones H3 levels were significantly depressed in delayed liver functional recovery group (0,776±0.018) than adequate recovery group (0.846±0.019) (P =0.046). The AUC value for circulating histones in predicting persistent liver dysfunction was 0.618±0.06 and outperformed LFTs.

The optimal cutoff value of Total histones H3 obtained from the analysis of ROC curves was 0.895 and surpassed all other parameters measured in this study with a sensitivity of 95.7% and a specificity of 32.9% respectively for examining a delayed liver function recovery (P=0.007).

In linear logistic regression analysis postoperative histones with the predictive accuracy of 13.1 (Odds ratio); was identified as an independent risk factor for delayed liver function recovery.

Conclusion. The circulating histones level had the best value in predicting liver dysfunction within 24 h after donor hepatectomy.

Key words: Liver dysfunction, liver resection, donor hepatectomy, extracellular histons

IMPROVING RESULTS IN RECONSTRUCTIVE SURGERY FOR LARGE AND EXTREMELY LARGE WAR WOUNDS

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Aim. Improving the results of the large and the extremely large war wound defects

Material and methods. We were studied the results of surgical treatment of 58 wounded men aged 18-43 (median 24.1 ± 0.6) treated in one of the surgical departments of the hospital N of the Ministry of Health of the Republic of Azerbaijan in September-December 2021. The wounded were sorted in the military-field hospitals, mobile hospitals closest to the combat zone, the first surgical procedures and operations (primary treatment, thoracosenthesis, laparotomy, suturing wounds of parenchymal organs, their atypical resection, organ-preserving operations, extraperitonization and resection of hollow organs, placement of an appropriate protective stoma, or stoma for feeding, thoracotomy, immobilization of skeletal fractures etc.) performed. After the traumatic shock was eliminated, the wounded were transferred to the advanced stage in a stable condition on days 1-5 of the first operation.

Artillery shells (27; 46.55%) and mine explosions (12; 20.7%) predominated. 5 wounded (8.6%) were wounded by clusters banned by international conventions, and 2 (3.4%) by white phosphorus bombs. The latter wounds are characterized by the width of the surrounding molecular shaking zone, the frequency and severity of infectious complications, and the rapid growth of the wound surface in a short period of time.

A bacteriologically clean wound covered with smooth intensive granulation tissue was an indication for plastic reconstructive surgery. In 45 wounded (77.6%), wound defects were closed with local tissues, and autodermoplasty was performed in 3 (22.4%) healthy areas. For 3 wounded (23.1%) operations were performed 2, 4 (30.8%) 3, for the rest in one stage. Severe scars were formed in 3 injuries (30.8%), there were no keloid scars or deaths.

The result. Due to the widespread use of the most modern wounding and banned rocket(artillery) missiles, mines and other weapons of mass destruction during the Patriotic War of the Azerbaijani people, the wounds characterized by excessive size, severe clinical course, high frequency of complications, making their treatment and rehabilitation difficult.

Keywords: War wounds, traumatic shock, phosphorus bombs, clusters bombs, reconstructive surgery

LAPAROSCOPIC TREATMENT OF HYDATID CYST OF THE SPLEEN

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Introduction. Echinococcosis is a globally distributed parasitic disease with dangerous complications and relapses and found in every continent, especially in the Mediterranean, Middle East and Central Asia.

Aim. This article aimed to investigate the results of laparoscopic treatment of splenic hydatid cyst and evaluation of its effectiveness.

Material and methods. We analyzed the results of 17 patients (9 women (52.7%)) aged 15-82 (median - 49.2 ± 2.5 minutes) who underwent surgery in 2001-2021 at the Department of Surgical Diseases of the Azerbaijan Medical University with liver echinococcosis.

All patients underwent routine abdominal ultrasound, CT / MRI, and 6 (35.3%) CT scans of the chest. Albendozol 200 mg twice daily for 2 weeks before surgery.

Laparoscopic splenectomy was performed in 11 patients and laparoscopic excicision of splenic hydatid syst in 6 patients. The conversion occurred in 2 patients (unstoppable bleeding). The duration of the operation lasted 45-97 minutes (median: 67.2 ± 5.9 minutes). There were no complications or lethal outcomes requiring repeated surgery. In the postoperative period, albendozol (200 mg) was continued twice daily for 3 months. After 6 months, 12 months, 3 and 5 months, patients were included in the control examination. In the long term the site of relapse was liver (n=1). The median length of hospital stay was 4.1 ± 0.7 (2-8)

The result. The shorter duration of the inpatient treatment, as well as the early rehabilitation and excellent aesthetic effect, which are traditional advantages for laparoscopic surgery, gives reason to prefer laparoscopic technologies.

Key words: Splenic hydatid cyst, laparoscopic splenectomy, laparoscopic echinococectomy

at which point the cyst wall was removed. The duration of the operation lasted 45-120 minutes (median: 78.9 ± 6.3 minutes). There were no complications or lethal outcomes requiring repeated surgery. The site of relapse was liver N = 2, and N=5 other relapses.

The median length of hospital stay was 4.7 ± 1.1 (3-9) days after laparoscopic excision of hepatic hydatid cyst and after laparotomy was18.4 ± 3.2 (8-30)days.

The result. Early rehabilitation of patients, excellent aesthetic effect, a shorter postoperative stays in hospital as well as the reduced economic costs, which are the advantages of laparoscopic surgery, confirm the feasibility of performing excision of hepatic hydatid cyst using laparoscopic technology.

Keywords: Hepatic hydatid cyst, laparoscopic surgery, laparoscopic echinococectomy

VITAMIN D DEFICIENCY IN AUTOIMMUNE THYROIDITIS

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Objective: The aim of our study is to determine the duration of vitamin D therapy in patients with autoimmune thyroiditis (OIT).

Material and methods: Laboratory results and thyroid USG of 266 patients who applied to our outpatient clinic between 2019 and 2020 were evaluated. 94 patients diagnosed with AIT were included in group I, and the other 172 patients were included in group II. TSH of 71.2% of group I patients [19 – 71 years (47.5±27.5), 89 (94.7%) female, 5 (5.3%) male] (4.2 – 100 μIU/mL), 50% of them had Anti – TPO above normal (34 – 600 U/mL). TSH and Anti-TPO of group II patients [17 – 82 years (45.0±28.0), 137 (79.7%) female, 35 (20.3%) male] has been normal. The determination of vitamin D level according to the groups is given in Table 1. In both groups, 1 bottle per week was given to patients with <10 nq/mL, 8 bottles, 6 bottles to patients with 10-20 nq/mL, 4 bottles of Depovit D3 (vitamin D3 50000 IU – 15 ml) to patients with 20-30 nq/mL.

Result: At re-evaluation 2 – 3 months after treatment, 35 – 43 nq/mL in patients with < 10 nq/mL in both groups, 32 – 42 nq/mL in patients with 10 – 20 nq/mL, 35 – in patients with 20 – 30 nq/mL 45 nq/mL. However, in the re-evaluation after 6 months (vitamin D was not given in the spring-summer season), it was found that the vitamin D level decreased to 20-30 nq/mL.

Conclusion: There was no statistically significant difference (p=0.318) between vitamin D deficiencies in both groups before and after treatment. Patients were advised to continue the treatment of vitamin D deficiency with a prophylactic dose.

Table. Determination of vitamin D levels according to groups

Grade	Referance	I group	II group
Severe deficiency	< 10 nq/mL	16 (17,6%)	40 (23,4%)
Moderate deficiency	10 – 20 nq/mL	46 (50,5%)	71 (41,5%)
Mild deficiency	20 – 30 nq/mL	18 (19,8%)	37 (21,6%)
Normal	> 30 nq/mL	11 (12,1%)	23 (13,5%)
“more than normal	> 100 nq/mL	–	–
Vitamin D deficiency (total)		80 (87,9%)	128 (86,5%)

Keywords: Depovit, autoimmune thyroiditis, vitamin D deficiency

THE ROLE DEFECOGRAPHY IN THE DIAGNOSIS PROLAPSE OF THE RECTUM

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Introduction. Defecographyis a method of dynamic X-ray examination of the rectum during and after emptying contrast. Recent years, interest in this method of research has widely grown and it is widely been used in daily practice, university hospitals, specialized institutions coloproctological, gastroenterological department.

Aim. Determination of the role, as well as the parameters of dynamic radiographic defecography in patients with prolapse of the rectum.

Material and methods. From 2014 to 2019, in a complex study 78 sick patients aged 26-81 years with prolapse of the rectum included dynamic radiographic defecography. The reason for the study was the presence in the history of anal discomfort, chronic constipation, a difficult defecation, a sense of foreign body in the anal canal.

Results and discussion. During the defecography in 48 patients (62 %) mucosal prolapses was found, in 30 (38 %) cases rectal prolapse. The results were evaluated with the results of other methods research (recto-, rectosigmo- and colonoscopy, anorectal ultrasound, MRI of the pelvis, sfincteromanomatry) and on the basis of the appropriate treatment strategy was chosen. The time of emptying the contrast, as well as the volume of residual contrast in the lumen of the gut, is important in the choice of surgical tactics, the scope and method of surgical intervention.

The sensitivity of this method in the diagnosis of the diseases studied is 87.5%, accuracy-94.5%, specificity-92.7%. In all respects it surpasses other imaging methods (endoscopy, ERUS, MRI).

Conclusion. In the diagnosis and differentiation of anorectal and pelvic floor diseases, the informative value of dynamic radiographic defecography is high.

The sensitivity of the method is 85.5-92.3% specificity, 94% accuracy. Acomparative radiographic analysis of dynamic defecography with other visualizing means examination is importance in the choice of therapeutic tactics, volume and method of surgical intervention.

Key words: defecography, rectum prolapse, mucosal prolapse

FEATURES OF IN VITRO CALLUS TYPES AND THEIR APPLICATION IN CELL SELECTION

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ABSTRACT

Contrast-type callus (morphogenic and non-morphogenic, organic and inorganic, embryogenic and non-embryogenic, regenerative and non-regenerative) is formed in vitro cultivation of various implants in the induction environment.Callus is an integrated system formed both exogenously and endogenously. This system consists of homogeneous (morphogenic) cells that are constantly evolving into a system of heterogeneous groups of cells with morphogenetic potential specific to the species realized by different ways of morphogenesis. Callus cells are an ideal model system for the study and practical application of many aspects of morphogenesis. The basis for the use of callus models is morphogenetic processes that occur in cells grown in vitro, ranging from dedifferentiation to differential activity of the gene.

Currently, callus formation covers many aspects. First of all, these features include the origin and condition of the initial implant, the endogenous hormonal balance and the genotype of the donor cells. It determines the final result of induction by exogenous hormones, the type of hormonal inducers used the final balance of endogenous and exogenous hormones.

Studies aimed at clarifying the mechanisms of formation of morphogenic and non-morphogenic calluses, creating the initial conditions for the implementation of different ways of morphogenesis in vitro. Specificity of biochemical properties of formed morphogenic and non-morphogenic calluses is assumed. This is confirmed by studies of comparative proteomic analysis of morphogenic and non-morphogenic callus species in some cultures.

It should be noted that a comprehensive study of contrast callus species as model systems is promising in the assessment of various aspects of the regulation of induction and morphogenesis during use in cell engineering and cell selection. The most important condition in the reconstruction of plants in vitro is the selection of cultivation conditions and inductors as a trigger to increase the morphogenetic competence of different callus types.

Keywords: Callus Types, Dedifferentiation, Callus Induction, In vitro.

EPIDEMIOLOGICAL CHARACTERISTICS OF ORAL AND PHARYNGEAL CANCER IN THE ABSHERON ECONOMIC REGION

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Oral cancer is the second most malignant tumors of the head and neck after laryngeal cancer. In 2001, the incidence of oral cancer was relatively low in Azerbaijan. In Absheron region, the prevalence of OC was 3.7% in men, 0.8% in women, and in Sumgayit, 0.7% and 0.6% respectively. In the region, this indicator is 1.6% men and 0.6% women. In Absheron region the intensity indicator is $4,7^0/_{0000}$, men, $0,9^0/_{0000}$ women, and in Sumgayit $1,2^0/_{0000}$ and $1,1^0/_{0000}$, respectively. This indicator for the whole region was $2,5^0/_{0000}$ men and $1,0^0/_{0000}$ women. The highest prevalence rate was in Sumgayit ($11,2^0/_{0000}$ men and $11,5^0/_{0000}$ women). The prevalence indicator of Absheron is $10,9^0/_{0000}$ men, $10,4^0/_{0000}$ women. The general prevalence rate is $12,6^0/_{0000}$ men and $10,7^0/_{0000}$ women. Regionwide mortality rate is 0.03% men and 0.01% women. Regionwide lethality is 75.5% men and 14.3% women. The 5-year survival rate for the whole region is 47.7%. Aggressiveness indicator for the whole region is 0.8 men and 0.4 women. The ovarall incidence rate is $1.4^0/_{0000}$ for men, $0,03^0/_{0000}$ for women and for pharyngeal cancer $0,3^0/_{0000}$, in men, $0,4^0/_{0000}$ in women. The extensiveness of pharyngeal cancer was 0.7% in men and 0.8% in women In the Absheron region, and, respectively, 0.7% in men and 0.9% in women in Sumgayit. Regionwide extensiveness indicator is 0.7% for men and 0.9% for women. The intensity of pharyngeal cancer is the same for both gender $0,9^0/_{0000}$ in Absheron, and $1,2^0/_{0000}$, in men and $1,7^0/_{0000}$ in women in Sumgayit. The overall intensity rate is $1,0^0/_{0000}$ for men and $1,4^0/_{0000}$ for women. The prevalence of pharyngeal cancer in the Absheron region is 10.3% for men and 15.1% for women.

Keywords: oral cancer, pharyngeal, incidence, mortality.

EVALUATION OF DISEASE RESISTANCE AND GENETIC VARIATION IN THE COMMON BEAN (PHASEOLUS VULGARIS L.) COLLECTION

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Abstract

Keywords: common bean, anthracnose, resistance, DNA markers, ISSR

Common bean (P. vulgaris L.) is an annual grain legume widely used for human consumption. Common bean production is affected by several diseases which cause significant yield loss, thus the development of disease resistant varieties is one of the main goals of bean breeding programs. The main objective of the study was to screen the disease resistance of 37 common bean accessions in field conditions and to evaluate genetic diversity using DNA markers. The studied accessions were planted on the Absheron experimental station of the GRI of ANAS and evaluated for morphobiological traits and disease resistance. The main fungal diseases observed in the studied collection were ascochitosis and fusarium wilt, no any signs of anthracnose were recorded. Based on 1-9 scale of assessment, two accessions were estimated as moderate resistance to ascochitosis (Yerli piyada and Azegri / 34) and two to fusarium wilt (t/3, K-13044). The accessions Azegri/34 and Aze-PHA-36 showed high resistance to fusarium wilt. For the initial evaluation of genetic variation, the DNA from studied genotypes was extracted using CTAB protocol and PCR reaction was performed using three ISSR primers. In total, 17 alleles were amplified with band size ranging from 200 bp to 2000 bp. The numbers of total and polymorphic bands per primer were 6 and 1.7, respectively. The highest polymorphism (50%) was noted for UBC 834, while the lowest was for UBS 818. In general, the primers revealed low diversity in the collection. Currently, molecular genetic analysis are being performed with other ISSR and SCAR markers associated with anthracnose resistance genes (Co) in order to identify new sources of genetic variability and anthracnose resistance. The obtained results will assist in the selection of superior genotypes and use them in common bean breeding to develop new and improved cultivars with desirable characteristics.

ARTIFICIAL HIGHER EXPRESSION OF YJBO GENE CONFERS TOLERANCE AGAINST EPETRABOROLE ANTIBIOTIC IN ESCHERICHIA COLI

YJBO GENININ YAPAY OLARAK DAHA YÜKSEK IFADESI, ESCHERICHIA COLI'DE EPETRABOROLE ANTIBIYOTIĞINE KARŞI TOLERANS SAĞLAR

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Epetraborole (AN3365) bor içeren antibiyotiktir. Epetraborole'nin özellikle dirençli gram negatif bakterilere karşı anti-mikrobiyal aktiviteye sahip olması dikkat çekicidir. Bu antibiyotiğin etki mekanizması ve hücresel sistem üzerinde hangi biyomoleküller ile doğrudan veya dolaylı olarak ilgili olduğunun tespit edilmesi önemlidir.

Bu çalışmada, Escherichia coli model bakterisini kullanan gen odaklı bir yaklaşıma başvurulmuştur. E. coli plazmite klonlanan farklı genleri içeren klonlar (suşlar) kullanılmıştır. 96 adet genin E. coli içerisinde yapay ve kontrollü ekspresyonu sonucunda, artan gen ekspresyonunun, antibiyotiğe karşı tolerans seviyesini arttırıp arttırmadığı araştırılmıştır. Fonksiyon edindirme (gain of function) yaklaşımı ile yabanıl tipten daha fazla tolerans sağlayan klonlar belirlenmiştir.

Deneysel aşamada, seçilen 96 adet klonun, 6 farklı antibiyotik konsantrasyonunda, epetraborole antibiyotiği içermeyen ve 0,25 µg/ml, 0,5 µg/ml, 1 µg/ml, 2 µg/ml ve 4 µg/ml epetraborole antibiyotiği içeren besi ortamında büyüme durumları değerlendirilmiştir. Sonuçlara göre, yabanıl tip suşun 0,5 µg/ml epetraborole konsantrasyonu içeren besi ortamında üreme göstermediği halde, yjbO geninin plazmit içerisinde ifade edilmesi sonucu, Escherichia coli suşunun epetraborole (AN3365) antibiyotiğine karşı göreceli olarak yüksek tolerans gösterdiği bulunmuştur.

yjbO (pspG) geninin faj şok protein G'yi kodlayan bir iç membran proteini olduğu tahmin edilmekte olup, pspABCDE faj şok operonunun bir üyesi olduğu bilinmektedir. PspG (YjbO), psp operonu içeren tüm bakterilerde korunmuş bir gendir ve pIV sekretin stresinde ifadesi artmaktadır. E. coli'de epetraborole (AN3365) antibiyotiğine karşı, pspG (yjbO) geninin doğrudan veya dolaylı olarak ilişkili olabileceği bu çalışma ile ilk kez sunulmaktadır.

Anahtar Kelimeler: Bor içeren antibiyotik, epetraborole, Escherichia coli, gen, yjbO, AN3365

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Epetraborole (AN3365) is a boron containing antibiotic. It is particularly noteworthy that epetraborole possesses antimicrobial activity against gram-negative resistant bacteria. It is important to elucidate the mechanism of action of this antibiotic and related biomolecules involved directly or indirectly in the cellular system.
In this study, a gene-based approach was taken using Escherichia coli as the model bacterium. The clones (strains) containing different genes cloned into E. coli plasmids were used. As a result of artificial and controlled expression of 96 genes in E. coli, it was investigated whether increased gene expression affected the tolerance level of the particular strains to the antibiotic. The experiments were conducted to evaluate the growth of a number of 96 clones in the LB medium containing 6 different epetraborole concentrations of 0, 0,25, 0,5, 1, 2 and 4 µg/ml. According to the results, although the wild type strain did not grow in the medium containing 0.5 µg/ml epetraborole concentration, the strain possessing yjbO gene expressed in a plasmid exhibited higher levels of tolerance up to 4 µg/ml against epetraborole.
The yjbO (pspG) gene is predicted to be an inner membrane protein that encodes phage shock protein G and known to be a member of pspABCDE phage shock operon. PspG (YjbO) is a conserved gene in all the bacteria possessing the psp operon and its expression is upregulated under pIV secretin stress. This study presents for the first time that pspG (yjbO) gene is directly or indirectly related to the antibiotic epetraborole (AN3365) in E. coli.

Keywords: Boron containing antibiotic, epetraborole, Escherichia coli, gene, yjbO, AN3365

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STUDY OF SOME INTRODUCED VARIETIES OF POMEGRANATE IN AZERBAIJAN

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In order to get a large number of local pomegranate varieties, people of Azerbaijan conducted numerous selections. The most popular varieties of Azerbaijan are Guleysha, Bala Mursal, Gara Bala Mursal, Gyrmyzy gabyg, etc. However, the situation with pomegranate does not meet the new requirements in Azerbaijan, and agro-climatic resources are not fully utilized. The loss of local varieties, the replacement of local varieties by breeding varieties, limited range of valuable specimens, the depletion of the gene pool are of great concern. In order to help collect different varieties and forms, especially the species with valuable traits for breeding, improve the variety of pomegranate in different regions and natural zones, it is important to collect, cultivate different varieties and forms in different regions and zones and involve foreign varieties by introduction.

Our gene pool collection consists of 59 varieties, and along with local varieties, we also have foreign varieties there: Purpursid, Vanderful, Ak-dona, Kazake, Namangan, Kandagarski. Before they are included into the collection, we conduct their evaluation, study their biological-economic, biochemical parameters and pomological characteristics.

We studied about 30 different parameters of three introduced varieties of pomegranate (Kazake, Vanderful, Malta). Kazake is Uzbekistan origin, Vanderful is USA origin, Malta is Spain origin varieties. While the weight of Vanderful -150; Kazake-200; Malta - 150 g, in their homeland these varieties belong to the large fruit group.

One of the main criteria for the studied varieties was the high percentage of sugar. Thus, in the variety Kazake it was 17.9%; in Malta-18.4%; in Vanderful -16%. Juice yield in Kazake was 44.34% in Malta 46.6% and in Vanderful 59 % respectively. Vanderful has a high juice yield, as it is a soft-seeded variety. However, along with the percentage of sugar, the acidity of the named varieties was higher than in the homeland, in Kazake it was 1.8; in Malta was 0.9 and in Vanderful was 0.8% respectively.

According to glucoacidometric coefficient, Kazake was evaluated as sour-sweet, but varieties Malta and Vanderful as sweet varieties.

Keywords: pomegranate, economic parameters, biochemical parameters, "Kazake", "Vanderful", "Malta"

BIOECOLOGICAL CHARACTERISTICS OF THE GENUS GAGEA

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In the early seventeenth century, the French scientist Turnefor, in the late eighteenth century, and in the early nineteenth century, the eminent botanist F.K. Marshall-Bieberstein made the first expeditions to study geophytes, and this research continues to this day. The study of geophyte plants in the flora of Azerbaijan was carried out by A.A. Grossheim, O.Ibadli, and this tradition is still continued by many scientists in various directions.

Bioecological research is one of the important areas of plant taxonomy. Plants with different ecological conditions acquire life forms that suit them. Among these plants, the Asparagaceae, Liliaceae and Iridaceae families should be especially noted.

According to Raunker's classification of life forms in 1934, the species gagea (Gagaea Salisb.) belonging to the family Liliaceae are considered cryptophytes. Cryptophytes - Plants that protect the bulbs, rhizome, regenerating shoots under the ground in an unfavorable environment.

Because bulbous plants belong to the group of geophytes of cryptophytes.

In Azerbaijan, geophyte plants are mostly distributed in mountainous areas. Geophytes are protected in the subsoil during unfavorable periods of life. Many geophytes are ephemeroid plants adapted to living in mesophytic conditions. Gagea genus species belonging to geophytes and having a wide range in Azerbaijan are divided into two flora cenotypes: forest and meadow cenotype. The meadow cenotype is divided into the meadow plain and subalpine (slopes) flora element.

Due to the abundance of nutrients in the soil, plants are divided into 3 groups: eutrophic plants, oligotrophic plants, mesotrophic plants.

1. plants that grow in forest soils rich in humus and nutrients: G.charadzae, G.carolii-kochii, G.chanae,G.helenae.
2. There are no oligatrophic plant species in Azerbaijan..
3.These are plants that are common in medium nutrient-calcium soils. These are also divided into 3 categories due to its attitude to calcium. Plants that love calcium, avoid calcium, and are calcium intolerant.

Plants living in carbonate soils are more demanding of calcium than other plants. According to this requirement, plants are divided into 3 groups.

1. Calciphytes: Such plants do not like sour soil.
2. Calciphobes (plants that escape from calcium): Plants that escape from the soil with excessive calcium, especially meadow species.
3. Calcium intolerant: they live in soils with minimal calcium.

As a result of our research carried out on different vegetation types, the following flora cenotypes have been identified.

1.Meadow species: G.eleonarae, G.sulfurea, G.chomutovae, G.sarmentosa
2.Forest species: G.caroli-kochii, G.chanae, G.helenae, G.charadzae
3.Semi-desert and mountain-steppe species: G. commutata, G.reticulata

Keywords: Bioecological, cryptophytes plants, cenotypes

BIOLOGICAL CHARACTERISTICS AND APPLICATION OF BERBERIS NUMMULARIA BUNGE

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To expand international cooperation in the field of biodiversity conservation, the Republic of Azerbaijan acceded to the UN Convention on Biological Diversity in 2000. The National Strategy and Action Plan for the implementation of the "National Strategy for the Protection and Sustainable Use of Biological Diversity in the Republic of Azerbaijan for 2017-2020" are aimed at implementing effective measures in this area and achieving concrete results. For this purpose, the bioecology of Berberis L. species was studied to regulate the ecological balance.

Berberis nummularia Bunge is widespread in Central Asia, Uzbekistan and Iran.
It is a shrub up to 4 m high. The branches are dense, brown or crimson. The umbrella is broad, branched, with curved branches. The bark of the young plant is bluish, then brown. Leaves are about round, 3-4 cm long and up to 3 cm wide. Thorns are simple or three-part. It is reddish-orange in autumn. Flowers are yellow and in clusters. It is 0.3-0.6 cm long and is located in clusters of 20 or more. Leaves and petals are ovate. Blooms in May-June. The berries are ovoid-spherical, red, 5-6 mm long. It bears fruit in September. It grows very fast.
The application of Berberis nummularia Bunge is wide. It is a promising species both in the food industry and in landscaping. The fruits are tastier than other species of barberry. Can be used in confectionery and cooking.

It can also be used in medicine. In hypertension, it relieves spasms in the arteries and strengthens them. Helps remove cholesterol from body. By stimulating the immune system, it breaks down cancer cells and has an antimicrobial effect. But do not eat unripe fruits. Unripe fruits can cause poisoning.
Berberis nummularia Bunge can be used in solitary, group plantings and construction of live fences.

Keywords: biological diversity, cluster, hypertension.

CONCENTRATIONS OF DOMINANT AIRBORNE POLLEN IN IZMIR CITY, TURKEY (2020)

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Summary

As pollens play a role in the reproduction of wind-pollinated plants, they are also the source of many allergic diseases due to seasonal pollination. Allergic diseases affect 15-18% of our society, and they constitute an important group of diseases due to the loss of labor and financial losses, and their rate is increasing worldwide. In studies conducted in Turkey, as well as all over the world, it is aimed to reach concrete goals in the diagnosis, treatment and especially prevention of pollen-related allergic diseases by examining the concentrations, start and ending times of pollen, which can cause allergic rhinitis, allergic conjunctivitis and/or allergic asthma in individuals sensitive to pollen. For this reason, aeropalynological studies have been and continue to be made in many regions. Izmir is the third largest city on the west coast of Turkey in terms of population. Continuous monitoring of atmospheric pollen in Izmir in accordance with the volumetric method, started in April 2019 and is still active. In this study, atmospheric pollen data recorded in the region in 2020 were shared. During the study, a total of 18886 pollen/m^3 pollen belonging to 39 taxa were recorded in Izmir atmosphere. 83.68% of these pollens belong to woody and 16.32% herbaceous taxa. Cupressaceae/Taxaceae (23.93%), Quercus (18.87%), Pinaceae (18.35%), Olea europaea (11.41%), Urticaceae (7.81%), Fraxinus (4.14%), Poaceae (2.78%), Plantago (2.44%), Morus (2.25%) and Platanus orientalis (1.07%) are taxa whose pollen was found predominantly in the air. However, during the study, the highest pollen concentration was recorded in April, May, March and February, respectively. We think that the data we obtained will contribute to the modeling studies in which the relationship between the pollen concentrations recorded in the region and the meteorological factors are evaluated.

Keywords: Aeropalinology, pollen, Izmir

COVID-19 PANDEMIC AND POISONING EPIDEMIOLOGY IN AZERBAIJAN

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Objective. The global pandemic of the new coronavirus SARS-CoV-2 has not only been a serious stress test for healthcare systems in many countries around the world, but has also had a significant impact on the structure and number of acute chemical poisoning. The aim of this study was to study the impact of the COVID-19 pandemic and related quarantine measures on the toxic-epidemiological situation in Azerbaijan.

Methods. We conducted a comparative analysis of the database of the Clinical Medicine Center in Baku during the nine months of the pandemic period (March 20 - December 21, 2020) with the data of the same period in 2019 and the previous decade (2009-2018).

Results. The alarming dynamics of a significant increase in the number of alcohol surrogates and primarily methyl alcohol poisoning, was revealed.

If in the 10-year period of 2009-2018, the intoxication of alcohol surrogates was only 0.09% of the total poisoning cases, then during the study period of 2020 the share of such intoxications increased to 3.4%. The mortality rate in alcohol surrogate intoxication group in 2019 was 5.6% versus 50.0% in March-December 2020. All fatal cases in alcohol surrogate intoxication cohort were related to methyl alcohol poisoning, thus, the mortality rate of this pathology was 61.5%.

Conclusion. The COVID-19 pandemic and related quarantine measures had a notable impact on the toxic-epidemiological situation in Azerbaijan and led to a significant increase in alcohol and methanol poisoning and fatality.

Keywords: COVID-19, poisoning, Azerbaijan, epidemiology

NITRATE CONTENT IN ROOTS OF RESISTANT AND SUSCEPTIBLE PEPPER (CAPSICUM ANNUUM L.) CULTIVARS INFECTED BY PHYTOPHTHORA CAPSICI L.

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Abstract

Pepper is an important vegetable with high economic value and grown in many tropical, subtropical and temperate climates of the world. Phytophthora root rot, caused by Phytophthora capsici (P. capsici), is one of the most economically destructive soil-borne diseases of pepper. In this study, nitrate (NO_3) amount in P. capsici-22 -inoculated and noninoculated roots of resistant (CM-334) and susceptible (KM-Hot and Sera demre-8) pepper cultivars was determined on the 2^{nd}, 4^{th} and 6^{th} days. Three pepper cultivars with different resistance to P. capsici-22 were inoculated with 10^4 zoospore/mL to analyze the time course of NO_3 content. NO_3 content increased as early as 2 days after inoculation in three pepper cultivars. In the P. capsici-22 isolate, three pepper cultivars were compared in terms of NO_3 content; in the 2^{nd}, 4^{th} and 6^{th} days following infection, the highest level of NO_3 among three pepper cultivars were observed in the CM-334, and a significant difference was detected among the pepper cultivars ($P<0.05$). When compared to control root, the maximum increase in NO_3 content was observed in the roots of CM-334 seedlings on day 6 following infection ($P<0.05$). In KM-Hot cultivar, compared to control, the maximum increase in NO_3 content was found on 4^{th} day following infection. On the other hand, P. capsici-22 treatment decreased NO_3 amount on 4^{th} and 6^{th} days in Sera demre-8 cultivar ($P<0.05$). This present work demostrated that the duration of P.capsici treatment caused different reactions in NO_3 content in different pepper cultivars.

Keywords: Phytophthora capsici, Capsicum annuum, nitrate

FORMATION OF THERIOFAUNA OF THE KARABAKH TERRITORY

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Abstract

One of the tasks of zoologists is to study the biodiversity of the transformed landscapes to prepare the biological basis for the management of biogeocenosis in accordance with the interests of the national economy. There is a constant transformation of species in the fauna. The number of species in the area is usually inspected every 5-10 years. The study of theriofauna in Azerbaijan began 240 years ago. However, a catalog of systematic studies of the therofauna was published in 1942. This publication records 99 species of mammals in the fauna list of Azerbaijan, of which only 56 species are found in Karabakh. In 1966, Dr. Kh.M. Alakbarov studied Karabakh mammals and summarized them in the form of a monograph. Kh.M. Alakbarov showed that 61 species of mammals are distributed in Karabakh. Some species are shown on the basis of literature. According to articles published in 2000-2004, more than 65 species are expected to inhabit the territory of Karabakh. In recent years, the systematics of a number of isolated populations, subspecies was revised and the number of mammal species identified as cryptic species are expected to increase from 4,000 to 5,500 in the world, 115 in Azerbaijan, and 75 in Karabakh. Out of 42 mammal species included in the Red Book of Azerbaijan, 24 species are expected to inhabit the Karabakh. 2 species of Insectivores, 10 species of Bats, 2 species of Rodents, 8 species of Carnivors, 3 species of Ungulates included in the Red Book of Azerbaijan are widespread in Karabakh. There are more rodents according to the number of species.
Among the mammal species distributed in Karabakh, 9 species belong to the Caucasian endemics (4 Insectivores, 5 Rodents), and the endemic of Azerbaijan - the Nazarov's vole - Microtus nazarovi Schidlovsky, 1938. In the future, it is considered to study the landscapes and species in the territory of Karabakh.

Keywords: species, landscape, Red Book, status

ETHNOBOTANICAL CHARACTERISTICS OF POLYGONACEAE JUSS FAMILY IN THE LESSER CAUCASUS (TARTAR, BARDA) TERRITORY OF AZERBAIJAN

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Ethnic knowledge documentation and development a scientific basis, to assess economic potential, field research and surveys were conducted in 2021 in the Lesser Caucasus (Tartar, Barda) regions of Azerbaijan, and ethnobiological views of the population were recorded. The method of ethnobotanical research was used. Human populations of all ages (people aged 65-85 were more detailed) in the interviews were ensured.

Species of Polygonaceae Juss., especially their underground organs, are rich in vaccines, vitamins, food, dye and ornamental plants, also weeds species. 12 species belonging to a different genus (Oxyria digyna (L.) Hill (=O.elatior R.Br.exMeissen.), Rumex acetocella L., Rumex acetosa L., Rumex crispus L., Rumex patientia L., Rumex alpinus L., Rumex euxinus Klok., Rumex scutatus L., Polygonum monspelidense Thieb.ex Pers (=Polygonum aviculare L.), Polygonum alpestre C.A.Mey., Aconogonon alpinum (All.) Schur, Persicaria hydropiper (L.) Spach) are widely used in the region, both in raw and cooked form, as a food, and medicine in the form of ore, decoction. The surface parts-leaves and shoot, and very rarely the underground parts-roots and rhizomes are used.

Representatives were salted as food, dried, and used fresh in the preparation of various dishes. Rumex species are mainly used as medicine in astringent, hemostatic, wound healing, anti-tumor, infectious diseases, wound healing, Oxyria digyna - inflammation of the teeth and scurvy, Persicaria hydropiper - hemorrhoids, gout, rheumatism, diseases of the endocrine system, Aconogonon alpinum - sinusitis and gastritis, Polygonum species are mainly used as painkillers and anti-inflammatory agents and ways to use them have been identified.

Keywords: Polygonaceae Juss., Ethnobotany, medicinal and nutritional properties

IN PATIENTS WITH TYPE 2 DIABETES, WHICH IS ACCOMPANIED BY ARTERIAL HYPERTENSION

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Purpose of the study: To study the impact of hotline on the glycohemoglobin level in (A1c) patients with Type 2 diabetes accompanied by arterial hypertension.

Materials and methods: The study participants (n=224) were divided into 2 groups: Group “QX+” (patients who applied to the hotline, n=71) and group “QX -” (patients who did not apply to the hotline, n=153). At the beginning of the study, the groups “QX+” and “QX-” did not differ significantly from each other in terms of clinical and laboratory indicators.

Analyses was carried out after night (8-12 hours of fasting). Venous blood was examined. The fasting glycaemia levels were determined by using Precision PCx Medi Sense device (Abbot, USA) for laboratory examination of glycaemia and using appropriate test strips. The A1c level was determined by using the appropriate test kits in the express analyser (“SDA1C Care” (SD biosensor, Korea) and expressed in %.

Results: The average level of A1c in the group “QX+” decreased from 8.9 (± 0.12%) at the beginning of the study to 7.3 (± 0.10%) after 6 months, and increased 12 months later to 7.4 (± 0.11%) and 18 months later to 7.5 (± 0.09%), and then stayed at 7.4% until the end of the study.

The average A1c level in the group "QX -" decreased from 8.9 (± 0.09%) at the beginning of the study to 7.4 (± 0.07%) and 7.3 (± 0.07%) respectively 6 and 12 months later, and increased 18 months later to 7.4 (± 0.07%), while decreased 2.5 years later to 7.2 (± 0.07%), and remained at that level until the end of the study.

From the evaluation of the results obtained, it can be concluded that at the 2nd point there was a significant decrease in the A1C values and then it remained at approximately the same level. Differences between the groups were not statistically significant at any control point (in all cases, $p > 0.05$).

Conclusion: The hotline had no impact on the glycohemoglobin level in (A1c) patients with Type 2 diabetes accompanied by arterial hypertension.
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Keywords: diabetes mellitus, arterial hypertension, hotline, glycohemoglobin

THE INVESTIGATION OF PLANT SOURCED SUBSTANCES AND THE CREATION PERSPECTIVES OF NEW PHYTO PREPARATIONS BASED ON THEIR RESEARCH ACTIVITIES

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The rich plant resources of Azerbaijan open up huge prospects and wide opportunities for researchers in terms of searching for new biologically active substances and creating practically valuable preparations on their basis. At the same time, the priority tasks are the identification of potential sources of biologically active compounds, the chemical study of plants, the isolation in an individual state, the establishment of the structure of the molecules of plant substances, if necessary, their chemical modification and the determination of physicochemical and biological properties.

The solution of these problems in the future allows the development of innovative technologies for the production of medicinal products based on Azerbaijani plant raw materials. Of particular interest, in my opinion, are plants of the families Amaranthaceae, Asteraceae, Apiaceae, Fabaceae, Rutaceae, Canaeaceae, Lamiaceae, Magnoliaceae, Lauraceae as sources of a rapidly growing group of natural terpenoids - sesquiterpene γ-lactones, coumarins. It is known that 7000 compounds are currently used as cardiac drugs, antineoplastic agents, hormones, diuretics, antibiotics, anti-inflammatory, protecting (restoring) memory, analgesics, etc.

The author of this work, from plants of the families Apiaceae growing in Azerbaijan , isolated in an individual state and established the structures of several dozen new for science coumarins. In addition, a large number of coumarins, which are prescription components of drugs widely used in medical practice in the treatment of various diseases, have been isolated and identified from the plants of the mentioned families. Also known substances have been obtained - coumarins, such as peucedanin, prangenin, xanthotoxin, isopimpinellin, oxypeudanine hydrate, psoralens, ostol, which have anticarcinogenic activity. Of these, ostol also has pronounced coronary dilating and pressor properties. It should be noted that sesquiterpene lactones are a group of natural compounds with properties: anthelmintic, cardiotonic, anti-burn, anti-inflammatory, antimicrobial, antitumor, etc.

Keywords: Apiaceae, biologically active compounds, coumarins, antimicrobial, antitumor

BRACHYTHERAPY IN RADIATION THERAPY FOR ESOPHAGEAL CANCER

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The actuality of the problem. For increasing the efficiency of radiotherapy (RT) in esophageal cancer (EC) patients various methods of radiomodifications based on radiobiology-physical, chemical, non-traditional fractionation etc. have been used for many years. Complete or partial tumor regression after external beam radiotherapy (EBRT) is observed on average in 45-60% of cases, and three-year survival rates are 20-25%.Despite new techniques and modern equipment, possibilities of increasing total dose (TD) are limited by the tolerance of surrounding healthy tissues and organs. One of the ways to improve the results of radiotherapy for EC is brachytherapy with a high dose rate (HDR), which increases high dose to the tumor and reduces the radiation damage to healthy tissues.

Material and methods. The results of RT were analyzed in 164 patients with EC treated at the National Center of Oncology. In-group I included 78 patients underwent combined radiation therapy: EBRT TD 46.0-50.0 Gy, and the next 2 weeks - 2 sessions of intracavitary brachytherapy in a single dose of 5.0 Gy. In-group II, 86 patients underwent only EBRT, with identical technical parameters**.**

Results and discussion. It was revealed that the frequency of locoregional relapses in each of the groups was 24.8% and 38.7% ($p < 0.05$). Three-year survival rate with combined RT was 15.7%, with EBRT alone 9.1%. With prognostically less favorable indicators - entophytic tumor growth, N1-2, length of tumor ≥9.0 cm complete tumor regression with combined RT was 1.5-2 times higher than in control.

Conclusion. Combined RT improves EC treatment results in comparison with EBRT alone, while simultaneously reducing predictive adverse factors of the tumor.

Keywords: Esophageal cancer, brachytherapy, radiation therapy.

CLONING AND GENE EXPRESSION OF PHOSPHOGLYCOLATE PHOSPHATASE GENES FROM EUKARYOTE GREEN ALGAE CHLAMYDOMONAS REINHARDTII

EUKARİOTİK CHLAMYDOMONAS REINHARDTII YAŞIL YOSUNUNDA FOSFOQLİKOLAT FOSFATAZA GENLƏRİNİN KLONLAŞMASI VƏ EKSPRESSİYASI

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XÜLASƏ

Chlamydomonas reinhardtii yaşil yosunu fotosintetik hüceyrənin əlverişli modelidir. Bu birhüceyrəli eukariot fotosintez, tənəffüs, azotun assimilyasiyası, flagella hərəkətliliyi və orqanizmin fundamental funksiyası kimi bir çox fizioloji proseslərin tədqiqində geniş istifadə olunur. Üzərində asanlıqla manipulyasiya aparmanın mümkünlüyü və qısa həyat tsiklinə malik olması səbəbindən bu orqanizm genetik analizlər üçün güclü vasitədir.

Fotosintetik orqanizmlərdə fototənəffüsün əsas fermenti olan fosfoqlikolat fosfataza (FQF) Chlamydomonas reinhardtii yosununda klonlaşdırılmış, təmizlənmiş və xarakterizə olunmuş ilk eukariotik PNQ olmuşdur (Mamedov et al., JBC, 2005)**.** Bu ferment ribuloza-1,5-bifosfat karboksilaza/oksigenaza fermentinin oksigenaza aktivliyi nəticəsində yaranan fosfoqlikolatın hidrolizini kataliz edir və fotosintetik orqanizmlərin işıqda böyüməsi üçün əhəmiyyətlidir. Bu tədqiqat işində biz FQF-nın üç izogenini Chlamydomonas reinhardtii yaşıl yosunundan (fqf1, fqf 2, fqf 3) ayıraraq klonlaşdırmış və gen ekspressiyası analizi aparmışıq. C. reinharditti yosunundan üç fqf genini ayırmaq üçün biz əvvəlcə total RNT və mDNT hazırlamışıq. Daha sonra dizayn olunmuş praymerlər vasitəsilə FQF-nın üç genini ayırıb klonlaşdırmışıq.

Bu üç genin gen ekspressiyası analizləri ammoniumun yüksək və aşağı qatılığında həyata keçirilib. Genlərin ekspressiya səviyyəsinin ammoniumun aşağı qatılığında artdığı, yuxarı qatılığında isə azaldığı müşahidə olunub. Müəyyən olunub ki, FQF genləri azota qarşı həssas olub ammoniumun kiçik qatılıqlarında daha yüksək ekspressiya səviyyəsi göstərirlər.

Açar sözlər: Chlamydomonas reinhardtii, gen ekspressiyası, amplifikasiya, pET28a (+) vektoru, klonlaşma

ABSTRACT

The green alga Chlamydomonas reinhardtii is a useful model of a photosynthetic cell. This unicellular eukaryote has been intensively used for studies of several physiological processes such as photosynthesis, respiration, nitrogen assimilation, flagella motility and basal body function. It is easy-to-manipulate and short life cycle make this organism a powerful tool for genetic analysis.

Phosphoglycolate phosphatase (PGPase), a key enzyme of photorespiration in photosynthetic organisms, was cloned,purified and characterized from Chlamydomonas reinhardtii as the first eukaryotic PNGase (Mamedov et al., JBC, 2005)**.** This enzyme catalyzes the hydrolysis of phosphoglycolate, which is produced by the ribulose-1,5-bisphosphate oxygenase activity of ribulose-1,5-bisphosphate carboxylase/oxygenase, is essential for the growth of photosynthetic organisms in the light. In this study, we have isolated and cloned three iso genes of PGPase (pgp1,pgp2,pgp3) from Chlamydomonas reinhardtii green algaeand performed gene expression analysis. In order to isolate three PGPase genes from C. reinharditti, total RNA and mRNA was first prepared from C. reinhardtii. Using designed primers, three genes of PGPase were isolated and cloned.

Gene expression analyzes of 3 pgp genes were performed in high and low ammonium. It has been observed that the level of expression of genes in the low ammonium increases, and the level of expression of genes in the high ammonium decreases. It was found that PGPase genes are N-responsive genes and up-regulated at low ammonium concentrations.

Keywords: Chlamydomonas reinhardtii, gene expression, amplification, pET28a (+) vector, coloning

ACTIVITIES OF C4-PHOTOSYNTHETIC ENZYMES IN BREAD WHEAT GENOTYPES

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Abstract

Water deficiency is one of the most serious stress factors limiting plant productivity. Water stress causes much more yield losses than all the other factors together. Lately intensive investigations have been carried out on evalution of pysiological role of C4 metabolism enzyme in C3 plants.In C3 plants compared with the C4 plants the content and activity levels of C4 photosynthetic enzymes are lower. The aim of this work is to study C4 photosynthetic enzymes including PEPC, NAD-MDH and NADP-MDH in C3 plants and their roles in adaptation to water stress.

Leaves and developing grains of wheat genotypes differing in their productivity, drought tolerance, architectonics and other characteristic featureshave been used as the investigation objects. Bread wheat (Triticum aestivum L.) genotypes-Azamatli-95 (drought-tolerant with vertically oriented leaves, high-producrive), Giymatli-2/17 (sensitive to drought with penetrating leaves, high-productive) and Gyrmyzy gul-1(sensitive to drought, with vertically oriented leaves, high-productive) were used. The plants were grown in the Absheron peninsula. The enzyme activity was determined spectrophotometrically.

The highest NAD-MDH activity was observed in Gyrmyzy bugda and Gyrmyzy gul-1. In developing grains of all wheat genotypes, NADP-MDH activity has a tendency to decrease. PEPC and NAD-MDH activities in one of the ear elements, in grains, were always higher than in leaves.

Under water stress PEPC activity changed less than activities of NAD- and NADP-MDH. It is suggested that non-carbohydrate patways of the C-photosynthetic metabolism remain more stable under conditions of water deficiency.

Keywords: wheat, water deficiency, enzyme activity

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DOSIMETRIC COMPARISON OF FREE-BREATHING AND DEEP INSPIRATION BREATH-HOLD RADIOTHERAPY FOR ADVANCED STAGE LEFT-SIDED BREAST CANCER PATIENTS.

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Objective: The aim of our study is dosimetric comparison of the target volume and normal tissues among deep inspiration breath-hold technique and free inspiration radiotherapy of advanced stage left-sided breast cancer patients.

Methods: Fortypatients with left-sided breast cancer who were referred to our department for adjuvant radiotherapy following breast conserving surgery were included in our study. Following essential patient training, the patients underwent computed tomographic simulation using video-based Real-time Position Management system in the treatment position during both deep inspiration breath-hold and free inspiration. Combined guidance system with 3D video-glasses and audio guide were used. Two sets of tomographic images with 2.5-mm sections were transferred to the planning system and clinical target volumes and organs at risks were defined by the same physician. Treatment plans were generated by the same physicist using filed in field technique for the both CT scan sets. Dose-volume histograms for the clinical target volume, organs at risk – heart, left anterior descending artery, left lung and contralateral breast were compared.

Results: Mean age of the patients was 51.2 years (range 35-67 years). Dose-volume histogram analysis revealed that using deep inspiration breath hold technique provided significant reduction in mean (6.37 Gy vs 3.53 Gy, p=0.002), and maximum doses to the heart (39.59 Gy vs 46.03 Gy, p=0.022), also in mean LAD dose (9.8 Gy vs 15.7 Gy, p=0.006) and maximum LAD dose (31.51 Gy vs 40.62Gy, p=0.05).

Conclusion: The deep inspiration breath-hold radiotherapy technique is a reasonable and applicable method to reduce the heart and LAD doses, which in turn can reduce the long term cardiovascular complications of radiotherapy in patients with advanced stage breast cancer.

Keywords: breast cancer, cardiac toxicity, deep inspiration breath-hold, heart dose

THE PERTURBED MARKOV RANDOM WALK DESCRIBED BY THE AUTOREGRESSIVE PROCESS AR(1) WITH INSURANCE APPLICATION

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Keywords— autoregressive process, AR(1), Markov walk, Insurance data, time series

Regression analysis refers to classical statistical methods. To their wide range of possibilities, different regression procedures have long and successfully been used in engineering practice to identify processes.

Another approach to the description of the main trend of the time series and forecasting is the autoregressive model. Its construction is preceded by an assessment of the availability of autocorrelation in the studied series. Autocorrelation is an interdependence between successive values of the time series. Autocorrelation of the first order assesses the degree of interdependence between adjacent values of the time series.

In this paper, we consider a perturbed Markov random walk described by an autoregressive process AR(1) models for stocks of big insurance companies. Insurance companies are important players in the global financial economy. The negative effects of the pandemic didn't go unnoticed in this area. Studies allow us to say that the adequacy of autoregressive models pre-COVID-19 pandemic is high.

Descriptive statistics of the stocks studied during the study, indicators expressing the adequacy of the autoregression model were calculated, as well as a time-dependent graphical analysis was performed.

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EPIDEMIOLOGICAL CHARACTERISTICS OF OVARIAN CANCER IN GUBA-KHACHMAZ ECONOMIC REGION

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Ovarian cancer takes the 7th place by 4-6% in the structure of malignant tumors, and takes 2-3rd by 20-25% among malignant tumors of the female genital organs.The research will use medical history materials of patients treated for ovarian cancer at the National Center of Oncology of the Ministry of Health of the Republic of Azerbaijan in 2017-2020.
The highest extensiveness was in Khachmaz region (6.9%) and the lowest in Siyazan region (2.1%). The region-wide indicator was 5.7%. The intensity indicator for the whole region is $7,1^0/_{0000}$. The highest incidence rate is in Gusar and Guba districts - $10,4^0/_{0000}$ and $8,4^0/_{0000}$, and the lowest in Siyazan and Shabran districts $2,4^0/_{0000}$ və $3,5^0/_{0000}$ respectively. The highest prevalence rate was in Gusar region -$49,9^0/_{0000}$, and the lowest level in Siyazan region -$9,6^0/_{0000}$. This figure was $32,9^0/_{0000}$ for the region as a whole. The highest 5-year survival rate is in Guba region -51.3% and the lowest in Shabran region -12.5%. Region-wide indicator of this figure was 44.3%. The highest mortality rate was in the Khachmaz district -$0,03^0/_{00}$ and the lowest in the Siyazan district -$0,02^0/_{00}$. The total mortality rate in the region was $0,02^0/_{00}$. The highest lethality indicator was in Gusar region 20.0%, the lowest in Guba region -14.3%. The total region indicator was 15.8%. The highest level of aggression was in Khachmaz (0.4). The region-wide indicator of agressiveness was 0.3. The highest incidence was in the age group of 50-59 years and the lowest in the age group of 70 years and older, and the standardized indicator was $1,9^0/_{0000}$ and $0,7^0/_{0000}$, respectively. This figure for the whole region was $5,9^0/_{0000}$ regardless of age.

Keywords: ovarian cancer, incidence, mortality.

INTESTINAL DYSBACTERIOSIS AS A FACTOR IN PREGNANCY DISORDERS

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Introduction. A member scientific studies have shown that the presence of excessive conventional pathogenetic intestinal microbiota causes metabolic endotoxemia and intensifies some pathobiochemical reactions in the endometrium,leading to pregnancy termination.

Purpose of study. Assesment and comparison of intestinal microbiocenosis and endotoxemia levels in women at risk of miscarriage and normal pregnancy.

Matherials and methods.60 women were examined.The main group included 30 women at risk of miscarriage and the control group included 30 women with normal pregnancies.Microbiological analysis of feces was checked by polymerase chain reaction.The level of endotoxemia was studied by chromate-mass spectrometry.

Results.In the main group first degree dysbacteriosis was diagnosed in 24,3%of women. Second degree dysbacteriosis in 60%, and third degree dysbacteriosis is in 16,7%/.

In the control group, dysbiotic the patients of the main group,microbiological disturbances in first (75%) and secnd (25%) degree. Among the normal microflora,an increase in patogens

were observed.The level of endotoxinemia was 0,58 nmol/ml in the main group of patients and was reliably higher higher than in the women in control group-0,34nmol/ml($p<0,05$).

Conclusions.More significant dysbiotic changes in the intestinal microflora have been reported in women at risk of miscarriage,which explained by high levels of endotoxin in the blood.

Keywords: intestinal microbiota,dysbacteriosis,pregnancy disorders.

ACTIVITY OF INVERTASE FERMENT IN IRRIGATED MEADOW-GREY SOILS

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The biological activity of soil is determined by the definite ferments supply.
Invertase ferment entering the hydrolase class realizes decomposing of organic substances into simple substances.
A main aim in research performing is to study an effect of the different doses of biohumus and zeolite on activity of invertase ferment in irrigated meadow-grey soils used under the bean plant.
The research work was performed with the bean plant in irrigated meadow-grey soils. The experiment scheme: 1.Control (without fertilizer); 2.Biohumus 5 t/h; 3.Zeolite 5 t/h; 4.Biohumus+zeolite 5 t/h; 5.biohumus 7,5 t/h; 6.Zeolite 7,5 t/ha; 7.Biohumus+zeolite 7,5 t/h.
An action of invertase ferment significantly changed in the soils depending on development phases of the bean plant. Use of the different doses of biohumus and zeolite caused significant difference of action. An action of invertase ferment was higher in the first development periods (in spring) of the bean, the activity decreased in the middle of vegetation (in summer), and the action increased in the period of formation of the fruit and unripe beans at the end of vegetation (in autumn). In comparison the higher activity was observed in autumn, but the minimum action was observed in summer. Although performing the irrigation under the dry climate condition in summer the invertase ferment was characterized with the minimum action under the condition with the little humidity (rainfalls) and higher temperature.
As a result of the different doses of biohumus and zeolite the activity reduced. As a result of the different doses of zeolite the activity strongly differed from control. An application of biohumus alone and together with zeolite caused increase of invertase ferment action in comparison with the control.
So, the development phases of the bean plant and fertilizer norms caused significantly changing of invertase ferment activity in the irrigated meadow-grey soils.

Keywords: irrigated meadow-grey soils, invertase ferment, bean plant, biohumus, zeolite.

THE EFFECT OF HEAVY METALS ON ENZYME SYSTEMS THAT ENSURE THE PRODUCTIVITY OF AGRICULTURAL CROPS

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To date, the role of high doses of biogenic heavy metals (BHM) Fe, Zn, Mo, Cu, Mn in the development of functional disorders in the activity of enzymes of the main metabolic pathways: glycolysis and hexose monophosphate shunt in plants, and their effect on productivity remains unexplored. At physiological concentrations, BMP, as cofactors of enzymes, affect photosynthesis and respiration. The effect of toxic doses of heavy metals (HM) reduces the synthesis of chlorophyll and other photosynthetic pigments in the leaves, which affects the nutrition and growth of the entire plant. The process of seed germination is quite resistant to the action of HM, but having a high affinity for SH-groups, HM ions form strong bonds with sulfhydryl groups of cell wall proteins and mitotic enzymes, and thereby preventing division and stretching of plant cells and increasing the duration of individual stages of ontogenesis, leading to a complete absence of generative development. The high redox activity of BMP can increase the accumulation of ROS, as a result of which damage the enzyme systems. Toxic doses of HM reduce the intensity of the respiration process by altering the activity of key enzymes of glycolysis, the Krebs cycle, and the pentose phosphate pathway. The enzyme glucose-6-phosphate dehydrogenase (G-6-PD), generating NADPH, provides the reduction of oxidized glutathione. Reduced glutathione, necessary for the binding of ROS (peroxides), is spent on irreversible interaction with HM ions. As a result of oxidative damage to respiratory enzymes, hypoxia develops in plants, which changes the activity of lactate dehydrogenase (LDH). The study of the influence of LDH and G-6-PD on the productivity and quality of crops under the action of toxic doses of HM will make it possible to develop tactics to improve productivity.

Key words: heavy metals, productivity of crop plants, LDH, G-6-PDH

EVALUATION OF WATER QUALITY OF SAMPLES FROM KALBAJAR, AZERBAIJAN

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Abstract

In this research, for evaluation of water quality of potential drinking water sources in Kalbajar district of Azerbaijan, 7 samples (Omar Pass, Meydan River, Lev River, Nadirkhanli vil., Qarachay River, Zod Pass, Tutgunchay River) were collected and studied. Water parameters such as pH, Electrical Conductivity (COND), Total Dissolved Solids (TDS), Salinity (SAL), Dissolved Oxygen (DO), Temperature (T) were measured. Comparison of measured water parameters with recommended limit values (World Health Organization) showed that, electrical conductivity and total dissolved solids parameters (2260 µSm/cm and 1132 mg/L respectively) for sample collected from Zod Pass (point 6) are higher than WHO recommended limit values. This indicates that mentioned water source is highly mineralized and can't be used for drinking purposes. After sample preparation, heavy metal content (Cu, Fe, Mn, Mo, Ni, Zn) of investigated samples were also measured via Varian SpectrAA 220FS Atomic Absorption Spectrometer to determine possible pollution. Concentrations of Cu, Mn, Mo and Zn in all investigated water samples were well below the WHO recommended values (Table 2). Fe concentration in sampling points 2-7 and Ni concentration in sampling point 6 (Zod Pass) are higher than limit values. Although the median iron concentration in rivers has been reported to be 0.7 mg/L, after treatment Fe concentration in water are usually kept under 0.3 mg/L for drinking purposes. That's why direct use of mentioned water sources (points 2-7) as drinking water is not suggested (without pretreatment) based on findings in this study. Further investigation is needed (especially for sampling point 6 – Zod Pass) for overall evaluation of analyzed water sources.

VOLUMETRIC MODULATED ARC THERAPY (VMAT) COMBINED WITH GEMCITABIN FOR PANCREATIC CANCER.

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Objective: Pancreatic cancer (PAC) is the most difficult treated oncological disease with prognosis remains very poor with 5-year survival less than 5% in most reports. However the using of different regimes of chemoradiotherapy (CRT) is published there is a large field for using of new possibilities of radiotherapy (RT) in combination with chemotherapy (CT) agents.
Methods: A retrospective review of 21 patients (2013-2021) with PAC who underwent adjuvant combined VMAT radiotherapy and Gem based CT. The RT dose was 36 Gy in 2.4 Gy per fractions. Target included radiographically determined tumor and regional lymph nodes. Planning target volume (PTV) to Gross Tumor Volume (GTV) was 1 cm and around regional lymph nodes 0.5 cm. 10 patients were postoperated and 11 with unresectable disease. Gem was in dose 1000 mg/m^{2}givenevery treatment week in 1, 8 and 15 days of radiotherapy. Follow up was every month after treatment and patients Pet-CT and MRI images were reviewed.
Results: Median follow-up was 10.4 months. 4 (19%) patients died during 1 month after treatment because of progression of local disease and 6 (28%) patients from remote metastases. Duringthefollow-up period 10 (47.6%) patients diedand 11 (52.4%) are alive till the publication date. Median overall survival was 18 months. Gastrointestinal toxicity (GI) ≥ grade 3 (EORTC).
Conclusion: Our findings approve of effectiveness of using full-dose Gem chemotherapy in combination with VMAT radiotherapy in standard doses. This method has good results in terms of lowering of GI toxicity and allows concentrating dose in primary unresectable or partially resected tumor and regional lymph nodes.

Keywords: pancreatic cancer, radiochemotherapy.

SURGICAL CORRECTION OF PALPEBRAL CONJUNCTIVAL DERMOID AND DEEP CORNEAL ULCER TREATMENT IN A DOG

BİR KÖPEKTE PALPEBRAL KONJUNKTİVAL DERMOİDİN CERRAHİ YAKLAŞIMI VE DERİN KORNEAL ÜLSER SAĞALTIMI

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Özet

Dermoidler, embriyonik gelişim sırasında anatomik olarak bulunmaması gereken bir yerde şekillenen kutanöz doku oluşumlarına verilen isimdir. Bu olguda, brakisefal kafa yapısına sahip bir köpekte tespit edilen palpebral konjunktival dermoidin cerrahi ve medikal sağaltım yönetimi paylaşılmıştır. Sol gözünde kıl parçası, korneada bulanıklık ve görme kaybı şikayeti ile 1 yaşlı erkek, Fransız bulldog ırkı köpek oftalmoloji kliniğine getirildi. Klinik muayenede, oldukça büyük, üzeri yoğun kıllarla kaplı bir dermoid yapı görüldü. Yapının yüzeyinden uzayan kılların korneanın lateral yüzeyini irkilttiği, bölgede yaklaşık 1 cm çaplı derin bir ülser alanın şekillendiği görüldü. Aynı zamanda tüm kornea yüzeyinde şiddetli ödem tespit edildi. Cerrahi sağaltımda, dermoidin palpebral konjunktivanın geniş bir kısmını kapladığı, 3. göz kapağı kenarını da etkilediği dikkati çekti. Limbal bölgenin korunması sağlanarak dermoid dokunun folliküleriyle birlikte uzaklaştırılması sağlandı. Bölgede hiç follikül kalmamasına özen gösterildi. Bölge medikal sağaltımla sekonder iyileşmeye bırakıldı. Medikal sağaltım sürecinde yakalık ile kaşıma kontrolü sağlanan hastada, tobramisin, asetilsistein, siklopentolat, hyaluronik asit göz damlaları topikal olarak verilirken, sistemik olarak amoksisilin (7 gün) uygulandı. Postoperatif 7. gün kornea yüzeyindeki derin ülser alanın dolmaya başladığı ve ödemin azaldığı görüldü. Postoperatif 18. gün ülser alanın pannus dokusu ile tamamen kapandığı gözlendi. Korneanın saydamlığını kazandırmak için deksametazon göz damlası (12sa, 10 gün) başlandı. Üç ay süreyle takip edilen hastada, herhangi bir komplikasyonun olmadığı, ülser alanda iz kalmadığı ve dermoid bölgede küçük bir skar doku ile iyileşmenin mükemmel şekillendiği görüldü.

Oküler dermoidler yalnız bulunduğu yüzey yapısını bozmaz, aynı zamanda üzerindeki kıllar korneayı sürekli olarak irkilterek kornea yüzeyinin şiddetli şekilde hasar görmesine neden olabilir. Hayvanların doğdukları andan itibaren yakın takibi bu tür anomalilerin erken tespitini sağlayarak, erken müdahalesini mümkün kılar. Böylece bu olgudaki gibi görüşü tamamen kaybolan hastaların gözlerinin sorunsuz şekilde iyileştirilmesi sağlanmış olur.

Anahtar kelimeler: Göz anomalisi, kıl follikülü, deri

Abstract

Dermoid is a cutaneous tissue formation in an abnormal place. In this case, surgical and medical management of the palpebral conjunctival dermoid seen in a brachycephalic dog was presented. A 1-year-old male French bulldog was brought to the clinic with complaints of abnormal tissue, corneal opacity, and vision loss in his left eye. On clinical examination, a large dermoid structure covered with dense hair was noted. The hairs were seen to irritate the cornea, causing a large, deep ulcer. Also, severe oedema was detected on the corneal surface. In surgery, it was noted that the dermoid covered a large part of the palpebral conjunctiva and affected the third eyelid margin. The dermoid tissue was removed with its follicles while protecting the limbal region. Care was taken not to leave any follicles in the area. The area was left for secondary recovery with medical treatment. Tobramycin, acetylcysteine, cyclopentolate, hyaluronic acid eye drops were administered topically, while amoxicillin (7 days) was applied orally. On the postoperative 7th day, it was observed that the deep ulcer area began to fill and oedema decreased. On the 18th day, the ulcer was completely covered with pannus tissue. Dexamethasone eye drops (12 hours, 10 days) were started to restore the transparency of the cornea. The animal was followed up for 3 months. There were no complications, and healing was perfectly formed with small scar tissue in the dermoid region.

Ocular dermoids not only disrupt the surface structure on which they are located but also the hairs on them can constantly irritate the cornea, causing severe damage to the corneal surface. Close monitoring of animals from birth enables early detection and intervention of such anomalies.

Keywords: Eye anomaly, hair follicle, skin

INVESTIGATION OF GRAVITATIONAL PARAMETERS OF PLOTS STRUCTURE OF GROUND AND TIME CHANGES IN UPPER LAYERS OF EARTH'S CORE BY GRAVIMETRIC AND GEODESIC METHODS ON LIBERATED TERRITORIES

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Alongside with the material, moral, economic damage caused by Armenia for a long time on liberated territories , the occupation caused also the basis for corruption of land, atmosphere and ecological balance . For more than 30 years no geological , geophysical ,seismological ,etc work was conducted on these territories and this once more shows the necessity of investigation of geodynamics and movement of earth's core. Thus , conducting gravimetric investigations is important taking into the account the importance of studying the gravity degree for future reconstruction and building process from scientific –economic and strategic point of view.

It is important to form the Karabakh geodynamic polygon by means of the chains of gravitational observation centers on liberated territories and to connect them with other geodynamical polygons existing on the territory of the Republic. Gravitational parameters of plots , structure of ground and time changes in upper layers of earth's core will be investigated. The information of the movement of the earth's core due to endogen , exogenetic factors , investigation and prediction of catastrophic geodynamic processes (earthquakes, volcano eruptions , landslides , ground destruction) are also very important .

Abnormal techno genetic geodynamic processes cause the horizontal movement of earth's core , formation of breaks , underground accidents , floods ,etc. cause damage not only to industrial and strategic objects , engineer constructions, residential and other buildings but also to the population. The investigation of geodynamic processes meets the scientific- technical direction of priorities of the Azerbaijan Republic . The conduction of such investigations reflects the information about various physical spheres (gravitation , magnet, etc.) time - space structure of physical surface , its constitution , evolution, information about the Earth from scientific point of view . The studying of geodynamic processes has an important practical value so it can eliminate the risks , side effects of natural and techno genetic, geodynamic catastrophes , also it consists of monitoring of environment.As a result of this monitoring process one can investigate the parameters model of geodynamic processes, changing with time geodesic (abnormal winds, their change of direction, change of mass) and so on. According to their territory, geodynamic objects can be global, regional and local. Here we can add two subsystems – engineer constructions and engineer – geodynamic objects consisting of geophysical environment. The important characteristics of geodynamic objects is their intensive- deformation state. Thus, if a tension reaches a critical value the structure, characteristics of the objects will be affected and consequently it will lead to undesirable even catastrophic consequences for people .

Taking into consideration all these facts , one can see how important, significant and actual is to investigate gravitation of the Earth , conducting gravimetric investigations on liberated territories.

Keywords:gravitational field,geodynamic processes, geodynamic metods,anomaly

BIOLOGICAL ACTIVITY OF PLANT ROOT EXTRACTS FROM ROSA CANINA L.

ROSA CANINA L. BİTKİ KÖK EKSTRESİNİN BİYOLOJİK AKTİVİTESİ

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Özet

Günümüzde stres, sağlıksız beslenme, hareketin eksikliği ve genetik faktörler insanları birçok hastalığa sürüklemektedir. Antioksidan özellikli bitki ve meyvelerin hem bağışıklık sistemi üzerinde hem de birçok genetik hastalıklar için olumlu sonuçlar verdiği veriler ile desteklenmiştir. Rosa canina L. bitkisi, Rosacea ailesine mensup bir bitkidir. Anadolu ve Avrupa'da yaygın olarak bulunmakta olup kuşburnu olarak da bilinmektedir. Çok eski tarihlerde yüksek C vitamini içeriği nedeniyle skorbütten korunmada kullanılmış olup, ekstresinin geleneksel tıpta artrit, gut, ateş, soğuk algınlığında ve diüretik olarak kullanımı bildirilmiştir. Çalışmamızda Rosa canina L. bitkisinin kök materyali kullanılmıştır. Bu materyalden su ve metanol olmak üzere iki farklı özüt hazırlanmıştır. Hazırlanan bitki kök ekstrelerinin antioksidan aktivitelerinin belirlenebilmesi için DPPH radikal süpürücü aktivitesine, toplam fenolik madde içeriğine, demir şelatlama aktivitesine bakılmıştır. Bitkinin su ve metanol ekstrelerinin yüksek DPPH radikalini süpürücü aktiviteye sahip olduğu ve bu özütlerin pozitif kontrol olarak kullanılan BHT (IC_{50}: 96,47 µg/mL)'den daha yüksek aktiviteye sahip olduğu bulunmuştur. DPPH için su özütünün IC_{50} değeri 23,31µg/mL, metanol özütü için IC_{50}:26,94 µg/mL olduğu hesaplanmıştır. Bu değerlere göre su özütünün süpürücü aktivitesinin daha yüksek olduğu görülmüştür. R.canina L. su özütünün toplam fenolik madde miktarının 34,96 (mg GAE/g özüt), metanol özütüne 16,98 (mg GAE/g özüt) göre daha fazla olduğu hesaplanmıştır. En fazla gallik asite eş değer fenolik madde miktarı su özütüne ait olduğu görülmüştür. Özütlerin demir şelatlama aktiviteleri için IC_{50} değerlerine bakıldığında su özütünün IC_{50} değerinin 0,91 (µg/mL) metanol özütüne 10,77 (µg/mL) göre daha yüksek aktiviteye sahip olduğu görülmüştür. Antioksidan aktivite deneylerine ek olarak özütlerin oksidatif DNA hasarına karşı koruyucu etkisi olduğu belirlenmiştir. DNA koruyucu aktivite ile paralel olarak yapılan DNA etkileşimi deneyinde de etki görülmesi sonucunda yapılan ve etkili çıkan antioksidan deneylerin DNA üzerindeki etkisinin de yorumlanabilir olduğunu göstermiştir.

Anahtar Kelimeler: R.canina L. , Antioksidan Aktivite , DNA

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Abstract

Nowadays, stress, unhealthy diet, lack of movement and genetic factors lead people to many diseases. Research studies show that plants/fruits with antioxidant activity give positive results both on the immune system and for many genetic diseases. Rosa canina L. is a member of the Rosacea family. It is widely found in Anatolia and Europe and is also known as rosehip. It has been used to prevent scurvy due to its high vitamin C content in ancient times, and its extract has been reported to be used in traditional medicine for arthritis, gout, fever, colds and as a diuretic. Root material of Rosa canina L. plant was used in our study. Two different extracts, water and methanol, were prepared from this material. In order to determine the antioxidant activities of the prepared plant root extracts, DPPH radical scavenging activity, total phenolic content, and iron chelating activity were examined. It has been found that the water and methanol extracts of the plant have high DPPH radical scavenging activity and these extracts have higher activity than BHT (IC_{50}: 96.47 µg/mL) used as a positive control. The IC_{50} value of the water extract for DPPH was 23,31µg/mL, and the IC_{50} for the methanol extract was calculated as 26,94 µg/mL. According to these values, it was observed that the scavenging activity of the water extract was higher. It was calculated that the total amount of phenolic substance of R.canina L. water extract was 34,96 (mg GAE/g extract) compared to the methanol extract 16,98 (mg GAE/g extract). It was observed that the highest amount of phenolic substance equivalent to gallic acid belonged to the water extract. When the IC_{50} values of the extracts were examined for the iron chelating activities, it was observed that the IC_{50} value of the water extract was higher than that of 0,91 (µg/mL) methanol extract, 10,77 (µg/mL). In addition to antioxidant activity experiments, it was determined that the extracts had a protective effect against oxidative DNA damage. The effect of the DNA interaction test performed in parallel with the DNA protective activity, as a result of the effect, showed that the effect of the antioxidant experiments on the DNA could also be interpreted.

Keywords: R.canina L. , Antioxidant Activity , DNA

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QUALITATIVE PROPERTIES OF NONLOCAL ABSTRACT WAVE EQUATIONS AND APPLICATIONS

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Abstract

In this talk, the Cauchy problem for linear and nonlinear nonlocal wave equations are studied. The equations involve the convolution terms with a general kernel whose Fourier transform is operator functions defined in a Banach space E. Here, assuming enough smoothness on the initial data and some growth conditions on given operator functions: the existence, uniqueness, regularity, and blow-up properties of solutions are established. Moreover, L^{p}- regularity estimates for solution are obtained in terms of fractional powers of a given sectorial operator. We can obtain different classes of nonlocal wave equations by choosing the space E and abstract operators, which occur in a wide variety of physical systems. The aim here is to study the existence, uniqueness, regularity properties and, blow-up on the finite point of solutions to the initial value problem (IVP) for nonlocal abstract wave equation

(WE)

$u_{tt}-a\Delta u+A*u=\Delta[g*f(u)]$, $(x, t)\in R_{T}^{n}=R^{n}\times(0,T)$,

$u(x,0)=\phi(x)$, $u_{t}(x,0)=\psi(x)$ for a.e. $x\in R^{n}$,

where $A=A(x)$ is a linear, $g=g(x)$, $f(u)$ are nonlinear operator functions defined in a Banach space E, $a\geq 0$, $T\in(0,\infty]$, and $\upsilon*u$ denotes the convolution of the $\upsilon=\upsilon(x)$, $u=u(x)$. Here, Δ denotes the Laplace operator with respect to $x\in R^{n}$, $\phi(x)$ and $\psi(x)$ are the given E-valued initial functions.

Note that, the existence and uniqueness of solutions and regularity properties of a wide class of wave equations were considered e.g. in [1-3].

Keyword: Nonlocal equations, Boussinesq equations, wave equations, abstract differential equations, a blow-up of solutions, Fourier multipliers

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CHANGE OF STRUCTURAL-AQGGREGAECOMPOSITION OF GREY-BROWN SOILS DEPENDING OF VERTICAL ZONING

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Soil cover of the north-eastern region of the Greater Caucasus degraded and lost fertility because of different reasons.
An aim of the research is to study structural-aggregate and granulometric composition of grey-brown soils expanded in the same region taking into account the zonal characteristics of the soil cover in the north-eastern zone of Greater Caucasus.
A research object is grey-brown soils spreaded in the north-eastern region of the Greater Caucasus.
Change of structural-aggregate and granulometric composition depending on vertical zoning and utilization directions was identified on the basis of the sections of grey-brown soils expanded in the north-eastern region of Greater Caucasus.
The structural-aggregate composition of grey-brown soils were sifted in different sizes in a dry form and divided into separate fractions, a comparative analysis was performed.
The particles more than 3 mm are in the raw grey-brown soils in comparison with the cultivated and irrigated variants.
The raw variants of grey-brown soils are light clayey in the low layers, average loamy in the middle layers, and heavy loamy in the upper layers according to physical clay (<0.01 mm). The cultivated grey-brown soils are characterized by being average clayey of upper layers, average loamy of low layers, but the irrigated variants are characterized by being mean and heavy loamy of upper layers, average loamy of law layers.
Physical clay gathered more in the upper layers of the grey-brown soils.
All the variants of grey-brown soils which were investigated are characterized by being less of dust fractions. Compared to raw variants of these soils, the dust fraction is collected in the middle layers in the variants used in the upper, under agricultural crops, an amount of the large dust particles of grey-brown soils was more in all the variants. These soils can be called large dusty-loamy soils according to granulometric composition.

Keywords: north-eastern region of the Greater Caucasus, grey-brown soils, structural-aggregate composition of soils, granulometric composition

ULTRA-STRUCTURAL MODIFICATIONS OF GLIA- CAPILLARY CONTACTS IN THE ORBITOFRONTAL CORTEX OF THE WHITE LABORATORY RATS IN THE BACKGROUND OF FOOD PROTEIN DEFICIENCY AFTER SHARP VOICE IRRITATION

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Urgency. Glia-capillary contacts have been analyzed in the context of electron-microscopic studies after sharp voice irritation in the orbitofrontal cortex of large cerebral hemispheres of the white laboratory rats and actually not investigated in the background of post-stress food protein deficiency as well.

Purpose of the research was dynamical investigation and systematization of the electron-microscopic features of blood capillaries together with glia cells in the orbitofrontal cortex of the white laboratory rats in the background of food protein deficiency after sharp voice irritation.

Materials and methods. However, experiments have been carried out on 56 male white laboratory rats by means of two groups: 1) “control” – simple protein food ration (28); 2) “the main” – low protein food ration (28). Furthermore, “stress resistant” (12) and “not stress resistant” (16) half-groups have been separated in a special camera against two minutes call effect at an intensity of 120 decibels. No restriction was found during a water drinking. As a result, animals were emaciated by air embolism within 10, 20, 30 and 40 days after voice irritation, accordingly the orbitofrontal cortex examples were prepared and researched through JEM-1400 electronic microscope.

Main results. Please note that blood capilliars in various parts of orbitofrontal cortex in white laboratory rats possess the same structural plan (endothelial floor over the 0,1-0,2 mkm continuous basal membrane). However, there were discovered differences in types and numbers of glia cells that establish contacts with those mentioned above in terms of zone and cortex layers. So the voice irritation stress causes pericapillary edema, tightens glial contractions, focally violates their contacts with the capillaries. “Legs” of astrocyte cells are broken in separate places. Endothelium cells cytoplasm is vacuolated in a mosaic form and the nuclear grow by means of edema. These modifications are more intensive during initial 10 experiment days, but then gradually weaken. Nevertheless, significant part of the ultrastructural deteriorations in the rats with protein deficit food ration are observed within 40 days after voice irritation.

Result. Availability of ultrastructural modifications in the orbitofrontal cortex of white laboratory rats in the background of protein deficit food after sharp voice stress may be accepted as appearance of decompensator characteristics of structural-functional disorders of that area.

Keywords: orbitofrontal cortex, glia-capillary contacts

METHODS OF REHABILITATION WITH PHYSICAL FACTORS IN LOW BACK PAIN

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Introduction: Low back pain (LBP) is the most common musculoskeletal condition affecting the adult population. The lifetime prevalence is estimated at 60% to 70%. The most important symptoms of non-specific low back pain are pain and disability. Despite the widespread prevalence of the disease and the huge economic losses associated with it, there is still no optimal approach to its treatment.
AIM: The purpose of this study is to determine the efficacy of complex application of interference therapy (IT) and spine traction (ST) in patients with LBP.
Methodology: The study was conducted on 64 patients, who were randomly divided into two groups: treatment (n=32) and control (n=32). Patients of the control group were treated by spine traction, the treatment group – by using the ST and IT on the same day (10-12 days).
Results and discussion: The mean age of the patients was 43.63 ± 11.75. At the center of the clinical picture is pain syndrome, which has been observed in all patients of varying intensity and nature. The mean Visual Analogue Scale (VAS) was 6.46 ± 0.12 cm. Analysis of the results of Roland-Morris "Disability Questionnaire" (RMDQ) pre-treatment surveys showed changes in physical and social functionality of patients. The methods of treatment we have used have reduced the intensity and nature of the pain syndrome, and in some cases completely eliminated it. As a result of the treatment, the intensity of pain on VAS reduced in the control group from 6.31 ± 0.23 cm to 3.88 ± 0.35 cm ($p < 0.01$), and in the treatment group from 6.53 ± 0.17 cm to 2.91 ± 0.27 cm ($p < 0.001$). The decrease in the intensity of the pain syndrome led to an increase in physical activity in daily life, an improvement in emotional state, which was reflected in a statistically significant decrease in the integrated indicators of the Roland-Morris survey in all groups ($p < 0.001$). In general, as a result of treatment in the control group the level of QL decline reduced from 51.7% to 38.0%, in the treatment group from 56.8% to 32.6%. Thus, the results of the study show that the therapeutic efficacy of complex application of IC and ST is higher than their separate application.

Keywords: low back pain, radiculopathy, interference therapy, spine traction

THE INFLUENCE OF THE ENVIRONMENT ON THE DEVELOPMENT OF MICROORGANISMS IN PETROLEUM PRODUCTS

NEFT MƏHSULLARINDA MIKROORQANIZMLƏRIN INKIŞAFINA MÜHITIN TƏSIRI

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Məlum olduğu kimi, mühitin müəyyən iqlim şəraiti neft məhsullarını mikrobiloji oksidləşməyə məruz edir. Bu da neft məhsullarının fiziki-kimyəvi və istismar xassələrini dərhal aşağı salır.

Neft məhsullarının və digər kompozisiyaların biodavamlığını təyin etmək üçün göbələk kulturaları Petri çaşkalarında Çapek və suslo-aqar mühitində əkilir. Bakteriyalar üçün isə ət-pepton-aqar və mineral mühitdən istifadə olunur. Əkmək üçün dövlət standartı tərəfindən məsləhət görülən test-kulturalar və laboratoriyada bir sıra neft məhsullarından ayrılmış mikroorqanizmlər götürülür. Müəyyən olunmuşdur ki, neft məhsulları saxlanıldıqda və istismar olunduqda göbələk florası ilə daha tez yoluxur. Sonuncuların inkişafı və çoxalması neft məhsullarının tərkibindən, xassələrindən, o cümlədən saxlanılma şəraitindən çox asılıdır. Təsdiq olunmuşdur ki, neft məhsullsrı ətraf mühitdə olan mikroorqanizmlərlə yoluxur. Həmin mikroorqanizmlər bu mühitdə yaşayır və mövcud şəraitə uyğunlaşaraq öz fəaliyyətini artırır.

Mikroorqanizmlərin biodavamlığını və karbohidrogen oksidləşmə qabiliyyətini müəyyən edən təcrübələr, maye mineral mühitdə 40-50 saat ərzində 30-40^{o}C tempraturda çalxalayıcıda aparılır. Müəyyən olunmuşdur ki, eyni tərkibli yağ və yanacaq, xarici mühit şəraitindən və tərkibindəki mikroorqanizmlərin miqdarından asılı olaraq müxtəlif cür zədələnir.

Ayrılmış mikroorqanizmlər heç də həmişə karbohidrogen oksidləşmə qabiliyyətinə malik olmur. Tapılmış mikroorqanizmlərdən, ancaq bəziləri mineral mühitdə, içərisində neft məhsulu olan dəliyin ətrafında çoxala bilirlər. Bu da bir daha sübut edir ki, mikroorqanizmlərin əksəriyyəti neft məhsullarına saxlanma və istismar zamanı düşürlər.

Müəyyən olunmuşdur ki, neft məhsullarının çox qismi biodavamlı deyillər. Bu mikrofloranın növ və cins tərkibindən, həmçinin neft məhsullarının daşınmasından asılıdır.

Əsasən neft məhsullarının biodavamlığı, onların karbohidrogen tərkibindən, istehsal texnologiyasından və məhsulun istismar məqsədindən asılıdır.

Neft məhsullarını xüsusi qablarda tropic şəraitdə saxlayanda mikroorqanizmlər inkişaf edir. Beləki, uzun müddət saxladıqda, görünür ki.mineral duzların və suyun çatışmamazlığı nəticəsində mikroorqanizmlər əvvəkkinə nisbətən çox yaxşı çoxalır. Lakin az miqdarda belə fosfor və azotun mövcudluğu qabda nəinki daxil edilmiş, hətta havadan düşmüş mikroorqanizmlərin də inkişafına səbəb olur.

Neft məhsullarından 50-dən çox mikroorqanizm koloniyası ayırmış və onların karbohidrogen oksidləşdirici xassəsi öyrənilmişdir. Müəyyən olunmuşdur ki,bu mikroorqanizmlər yağda, ysm-də yaxşı, yanacaqda isə zəif inkişaf edir. Onlar müxtəlif materiallara, sürtkülərə qarşı çox aqressiv olurlar.

Açar sözlər: mikroorqanizm, neft məhsulları, karbohidrogen.

As it is known, certain climatic conditions of the environment subject microbiological oxidation of oil products. This immediately reduces the physicochemical and operational properties of petroleum products.

To determine the bioavailability of petroleum products and other compositions, mushroom cultures are grown in Petri dishes in Chapek and suslo-agar medium. For bacteria, meat-peptone-agar and mineral medium are used. Test cultures recommended by the state standard and microorganisms isolated from a number of petroleum products are taken in the laboratory for planting. It has been found that petroleum products are more susceptible to fungal flora when stored and used. The development and reproduction of the latter depends on the composition and properties of petroleum products, as well as storage conditions. It has been confirmed that oil products are infected with microorganisms in the environment. These microorganisms live in this environment and increase their activity by adapting to the existing conditions.

Experiments to determine the bioavailability of microorganisms and the ability to oxidize hydrocarbons are carried out in a liquid mineral medium in a shaker at a temperature of 30-40oC for 40-50 hours. It has been established that oils and fuels of the same composition are damaged differently depending on the environmental conditions and the amount of microorganisms in them.

Isolated microorganisms do not always have the ability to oxidize hydrocarbons. Of the microorganisms found, only some can reproduce in the mineral environment, around the hole containing the oil product. This proves once again that most microorganisms are exposed to petroleum products during storage and operation.

It has been established that most oil products are not bioavailable. It depends on the species and sex composition of the microflora, as well as the transportation of petroleum products. The bioavailability of petroleum products mainly depends on their hydrocarbon content, production technology and the purpose of the product.

Microorganisms grow when oil products are stored in special containers in tropical conditions. Thus, when stored for a long time, it seems that due to the lack of mineral salts and water, microorganisms multiply much better than before. However, the presence of such small amounts of phosphorus and nitrogen leads to the development of microorganisms not only in the bowl, but also in the air.

More than 50 microorganism colonies were isolated from petroleum products and their hydrocarbon oxidizing properties were studied. It was found that these microorganisms grow well in oil, fuel oil, and poorly in fuel. They are very aggressive against various materials and lubricants.

Keywords: microorganism, petroleum products, hydrocarbons.

NEUROPHYSIOLOGICAL CHARACTERISTICS OF POSTTRAUMATIC INJURY OF THE PERIPHERIC NERVOUS SYSTEM

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Traumatic neuropathies are among the most common diseases of the peripheral nervous system (PNS). During the war, the incidence of various PNS injuries increased. Gunshot injuries of PNS lead to major medical and social problems, including permanent impairment of extremities, long-term loss of labour capacity, and disability. The injuries are mainly caused by bullet, shrapnel and explosion. Clinical-neurological examination, neurophysiological examination methods - electromyographic (EMG) examination play a leading role in the diagnosis of traumatic injuries of the PNS, whichs allow to determine the degree, level and nature of the injury, as well as to carry out dynamic observation during treatment.
Purpose of the study: to study the neurophysiological characteristics of traumatic injuries of the PNS in veterans of the Patriotic War.

Materials and methods: After the war, the neurophysiological examination data of 32 veterans of the war with various PNS injuries, who passed neurophysiological examination at the National Institute of Sports Medicine and Rehabilitation, was analyzed.

Conclusion: The mean age was 30.67 ± 9.01. According to the results of the examination, in most injuries (53.1%) the process was severe, i.e. of neurotemesis type, in which "bioelectrical silence" was recorded, no M-response was obtained and a loss of impulse transmission rate (ITR) along the motor fibers was observed. In 28.2% of cases, the injuries were of the axonotemesis type, with a significant decrease in the amplitude of the M-response and a sharp decrease in ITR. In relatively rare cases (18.7%) the injuries were of the neuroapraxia type, in which case the above-mentioned indicators were moderately impaired. A significant part of injuries were related to the sciatic nerve (25%) and the fibular nerve (31.25%). The sciatic nerve injuries were mostly of neurotemesis nature, while the fibular nerve injuries were mostly (21.8%) incomplete.
Gunshot injuries of PNS are a major form of severe injury. The severity of clinical neurological disorders depends on the degree of nerve damage. The use of more advanced military weapons in modern times increases the likelihood of traumatic injury to the PNS. According to the clinical and neurophysiological examinations, the injuries were mostly severe in the sciatic nerve and its fibular branch.

Keywords: posttraumatic neuropathy, electromyography, neuroapraxia, axonotmesis, neurotemesis.

MICROSCOPIC STUDY OF THE PLANT CAMPANULA SAXIFRAGA

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There are thirty-two species of Campanula in the flora of Azerbaijan, one of which is Campanula saxifraga. Preliminary studies have shown that this species is promising in terms of chemical composition and raw material base.

The purpose of this study is to perform a microscopic study of C.saxifraga plant from the flora of Azerbaijan.

For the research, C.saxifraga plant was collected in June 2021, during the flowering period, around Gryz village of Guba region. Microscopic investigations were performed according to the general rules. During the analysis, the anatomical structure of the stem, roots and leaves of the plant were studied. From the outside towards the inside of the aboveground stem, the following histological sequence is highlighted in cross-section: The epidermis has quasi-isodiametric cells; a thick cuticle with toothed relief covers the thickened external wall.

In the cross-section, in the lower third area, the root has round shape and secondary structure due to the two secondary meristems: subero-phellodermic cambium (phellogen) and libero-ligneous cambium.

In cross section of the leaf C.saxifraga, we observe that it consists of large, flat cells with thin radial walls of the upper epidermis. The external walls are bulged and covered by a thick cuticle with toothed relief. The mesophyll consists of one layer of palisade parenchyma, with large and elongated cells, rich in chloroplasts, but also of 3-4 layers of lacunose parenchyma, having small cells with disordered layout and aeriferous spaces.

The performed microscopic researches allow to determine the identity of C. saxifraga plant and are sufficient to distinguish it from other close species.

Keywords: Campanula saxifraga, microscopic analysis, Azerbaijan

NON-ISOTHERMAL RTM FILLING STAGE COUPLED WITH CURING EFFECT

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Abstract.

The resin transfer molding (RTM) process is a composite manufacturing processing, belongs to the liquid composite molding (LCM) family. In this process, a fibrous reinforcement materials are first cut and placed into a stationary bed of a rigid mold, then a thermosetting resin is injected, through an injection machine, to fill the fabric preform. Then, the saturated preform is polymerized, when this stage is finished, the part is ready to be ejected from the mold. The isothermal RTM technique is widely used by many industrial sectors, such as automotive and aeronautic for manufacturing small to mid-size high performance composite components. However, this technique has major limitation in manufacturing large composite parts with high fiber volume fraction due to the pressure equipment, cost investment and process time that dramatically increases proportional to the part dimension of the manufactured part. One of the promising strategies to overcome this limitations is to control the evolution of resin viscosity through the time by changing temperature, but this leads to accelerate the degree of cure which in turns increases the viscosity of resin and excites the polymerization of resin before the part is completely filled. In this paper, a non-isothermal RTM filling strategy coupled with curing effect is investigated to study its effects on the filling time, resin pressure distribution and resin flow front profile.

Keywords: Isothermal RTM; Non-isothermal RTM; curing effect; filling stage.

BIOLOGICAL ESTIMATED OF IRRIGATED SOILS OF SUBTROPICAL ZONE USED UNDER VEGETABLE CULTURES

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Biological properties are important indicators of soil fertility.

The purpose of the study is to determine the biological activity of irrigated soils in the subtropical zone in crop rotations and conduct biological assessments.

The object of research is the rotation schemes applied in the irrigated lands of the subtropical zone, permanent plantings of vegetable crops.

Enzymes (invertase, urease, phosphatase, catalase and dehydrogenase) and biological activity indicators(emission CO_2, cellulose decomposition, biogenic features, nitrification and ammonification capacity) were used in the assessment of irrigated vegetable soils.

According to invertase activity the soils may be arranged into the following sequence: yellow-gley > gray-brown > meadow-forest alluvial > meadow- serozem. The lowest urease activity is typical of the yellow-gley soils, and the highest - in the irrigated meadow-forest alluvial soils. The phosphatase activity in the irrigated gray-brown, meadow-serozem, and yellow-gley soils is higher. The catalase activity may be inhibited by the salinity of the meadow-serozem soils and by the acidity of the yellow-gley soils. The mineralization of nitrogen compounds in the soils is relatively low. The studied ammonification capacity of soils may be arranged into the following sequence: irrigated yellow-gley > meadow-forest alluvial > gray-brown > meadow-serozem soils. Under permanent crops, the intensity of the CO_2 emission is somewhat lower. The lowest intensity of the cellulose decomposition is observed in the irrigated gray-brown soils.

Integral index of the bioecological soil status (IBSS) values in the virgin soils and in the soils used in the crop rotation systems vary from 82 to 100%; consequently, these soils may be qualified as soils with very high biological activity. Under permanent crops, the IBSS values vary within 60–70%. The biological assessment of soils shows that the soil fertility in the subtropical zone may be preserved and even increased upon irrigation and rational soil management.

Keywords: irrigated soils, subtropical zone, ferment activity, biological parameters, integral index of the bioecological soil status (IBSS)

PROBLEMS IN PRODUCTION OF ROLLER COMPACTED CONCRETE SAMPLE IN LABORATORY CONDITIONS

LABORATUVAR KOŞULLARINDA SİLİNDİRLE SIKIŞTIRILMIŞ BETON ÖRNEĞİ ÜRETİMİNDE KARŞILAŞILAN SORUNLAR

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Özet

Silindirle sıkıştırılmış beton, normal beton üretiminde kullanılan bileşenlerin kullanılmasıyla üretilebilmektedir. Sertleşmemiş halde, üzerinden silindirlerin geçmesine imkan veren, kuru kıvama sahip bir beton türüdür. Genellikle karayolu, havaalanı pisti ve baraj inşaatlarında tercih edilmektedir. Dayanıklılık özellikleri, düşük maliyet, hızlı ve kolay üretim ve düşük hidratasyon ısısı gibi avantajları bulunmaktadır.

Silindirle sıkıştırılmış betonlarda, saha koşullarında uygulanan sıkıştırma yönteminin, laboratuvar koşullarında uygulanması zordur. Bu nedenle, sahadan alınan örnekler ile laboratuvarda üretilen örnekler, farklı mekanik özellik gösterebilirler. Bunun yanında, laboratuvar ortamında silindirle sıkıştırılmış beton örneği üretilirken, birtakım sorunlarla karşılaşılmaktadır. Tasarımı yapılan betonun, kıvamını belirlemede genellikle Vebe ve Proktor deneyleri önerilmektedir. Uygulanması daha pratik ve silindirle sıkıştırılmış betonlar için kabul görecek, başka bir yöntem belirlenebilir. Üretim aşamasında, kuru kıvamlı olmasından dolayı laboratuvar mikseri ile karıştırılması zordur. Bu nedenle, mikserin yarı hacmine kadar doldurularak karıştırılması önerilmektedir. Silindirle sıkıştırılmış beton örneği üretiminde, basınç dayanımını belirlemek için küp veya silindir, eğilme dayanımını belirlemek için ise prizmatik boyutlu kalıplar kullanılmaktadır. Bu kalıplara beton doldurulmakta ve titreşimli çekiç ile sıkıştırılmaktadır. Kalıplara doldurma ve sıkıştırma işleminin kaç tabakada yapılacağı, sıkıştırma süresi, sıkıştırmada uygulanan güç ve titreşimli çekicin özellikleri üretilen betonun dayanım özelliklerini etkilemektedir. Tabakalar halinde sıkıştırma işlemi yapılması durumunda, tabakalar arasında soğuk derz ve boşluklar oluşmaktadır. Mümkünse tek tabaka halinde, silindirle sıkıştırılmış beton örneği üretilmesi önerilmektedir. Eğilme dayanımı için üretilen prizmatik örneklerin üretiminde, homojen sıkışma sağlanmalıdır. Silindirle sıkıştırılmış beton üretiminde karşılaşılan sorunlara çözüm üretmek, bu alanda yapılacak çalışmalara katkı sağlayacaktır.

Anahtar Kelimeler: Silindirle Sıkıştırılmış Beton, Sıkıştırma Süresi, Tabaka Sayısı, Titreşimli Çekiç, Silindirle Sıkıştırılmış Beton Tasarımı

ABSTRACT

Roller compacted concrete can be produced using components used in normal concrete production. It is a type of concrete with a dry consistency that allows rollers to pass over it in its uncured state. It is generally preferred in highway, airport runway and dam constructions. It has advantages such as durability, low cost, fast and easy production and low hydration temperature.

It is difficult to apply the compaction method applied under field conditions in roller compacted concretes under laboratory conditions. For this reason, samples taken from the field and samples produced in the laboratory may show different mechanical properties. In addition, some problems are encountered while producing roller compacted concrete samples in a laboratory environment. Vebe and Proctor tests are generally recommended to determine the consistency of the designed concrete. Another method, which is more practical to be applied and will be accepted for roller compacted concrete, can be determined. During the production phase, it is difficult to mix with a laboratory mixer due to its dry consistency. For this reason, it is recommended to mix the mixer by filling it up to half its volume. In the production of roller compacted concrete samples, cube or cylinder molds are used to determine the compressive strength and prismatic sized molds are used to determine the bending strength. Concrete is filled into these molds and compacted with a vibrating hammer. The number of layers to be filled and compacted into the molds, the compression time, the power applied in compression and the properties of the vibrating hammer affect the strength properties of the produced concrete.

Keywords: Roller Compacted Concrete, Compaction Time, Number of Layers, Vibrating Hammer, Roller Compacted Concrete Design

FIRST MOLECULAR DETECTION OF CYSTIC ECHINOCOCCOSIS DIAGNOSED INCIDENTALLY IN EXPLORATORY LAPAROTOMY OF A DOMESTIC CAT (FELIS CATUS) IN HATAY, TURKEY

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Abstract

Cystic echinococcosis is an important parasitic disease caused by the dog tapeworm Echinococcus granulosus. This parasite is widespread in worldwide. The life cycle of E. granulosus occurs between two mammalian hosts. Definive hosts of its are mainly dogs and the other canids. Intermediate hosts are sheep, goats, pigs, horses, cattle etc. Sometimes, dogs and cats acting as intermediate hosts of E. granulosus, accidentally ingest eggs, thus the disease (cystic echinococcosis) also occurs in these animals. A one years old, 3 kg weighted, neutered, female, Siamese breed cat was brought to the Department of Surgery in Veterinary Health Practice and Research Hospital, Hatay Mustafa Kemal University. Anamnesis was abdominal swelling. As a result of clinical and radiological examinations, was detected unknown intraabdominal formations. Decision of experimental laparotomy was receipted. At laparotomy were found to be multiple cysts on the right and left kidneys. In order to examine the cysts, its were taken by ligating with absorbable (4-0 number) suture from the root so that the integrity of the cysts was not disrupted and the liquid content did not disperse. These cysts were sent to the parasitology laboratory. DNA extraction was performed of cyst and the extract was used in PCR. As a result hydatid cysts which larvae stage of E. granulosus were detected by PCR. This is the first case report of cystic echinococcosis which confirmed by molecular method in a domestic cat from Turkey.

Keywords: Cystic echinococcosis, domestic cat, Hatay, Turkey

Özet

Kistik ekinokokkozis, bir köpek sestodu olan Echinococcus granulosus'un neden olduğu önemli paraziter bir hastalıktır. Dünya genelinde yaygındır. Yaşam çemberi iki memeli konak arasında geçer. Son konak genellikle köpekler ve diğer kanidelerdir. Ara konakları koyun, keçi, domuz, at, sığır ve benzeri hayvanlardır. Bazen, köpek ve kediler sestod yumurtalarını rastlantısal olarak ağız yoluyla alır ve ara konak olarak rol oynarlar, böylelikle bu hayvanlarda da kistik ekinokokkozis hastalığı meydana gelir. Bir yaşında, üç kg ağırlığında, kısırlaştırılmış, dişi, Siyam ırkı kedi Hatay Mustafa Kemal Üniversitesi, Veteriner Sağlık, Uygulama ve Araştırma Hastanesi Cerrahi bölümüne getirildi. Anamnezinde karın şişliği şikayeti vardı. Klinik ve radyolojik incelemeler sonucunda karın içinde bilinmeyen oluşumlar tespit edildi. Deneysel laparotomi kararı alındı. Laparotomide sağ ve sol böbrek üzerinde çok sayıda kist ile karşılaşıldı. Kistleri bütünlüğünü bozmamak ve içerisindeki sıvıyı boşaltmamak için kök kısmından emilebilir bir iplikle ligatür yapılarak incelenmek üzere parazitoloji laboratuvarına gönderildi. DNA ekstraksiyonu sonrası PCR işlemi uygulandı. Sonuç olarak E. granulosus'un larva aşaması olan kist hidatik PCR yöntemiyle tespit edildi. Bu vaka raporu Türkiye'de evcil bir kedide moleküler olarak tespit edilen ilk kistik ekinokokkozis vakasıdır.

Anahtar Kelimeler: Kistik ekinokokkozis, evcil kedi, Hatay, Türkiye

THE REGIONALLY FEATURES OF THE LYMPHOID STRUCTURES OF THE URINARY BLADDER

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Abstract

Lymphoid structures of various tubular organs in postnatal ontogenesis were investigated and their morphological regularities were determined. However, the morphological features of the urinary bladder walls in this direction have not been adequately investigated. İn different age periods of postnatal ontogenesis the lymphoid structures of a walls of human urinary bladder are investigated by a macro-microscopy with Helmans metods and by histology methods. Statistical data processing included calculation of arithmetic-mean values, their errors, confidential intervals. When studying micropreparations for biometrics, IBM 486 SX33 computers were used with the help of the Morphologist application package, working in the Windows environment. In all ages of postnatal ontogenesis, lymphoid nodules and diffuse lymphoid tissue are found on the wall of the urinary bladder. The lymphoid structures of the urinary bladder are characterized by regionally peculiarities. Regardless of age, the quantity of lymphoid structures increases in the proximal part of the urinary bladder, than in the middle and distal parts. As a result, at all stages of a postnatal ontogenesis the quantity of lymphoid structures in the lover part of a urinary bladder are more than in upper and the middle parts. However, in old age, there are almost no and rarely found lymph nodules in a walls of a distal part of urinary bladder. In early chilhood age periods of postnatal ontogenesis, the density of lymphoid nodules in the distal part of a urinary bladder increases by 2.0 times compared to the proximal part and is more in 1.4 times than in middle part. This is due to the location in the distal part of the urinary bladder the inner sphincter of urethra and sphincters of a right and left ureters. The sphincters of the cavity organs participate in the physiological discharge of the organ and play a role in increasing the anti-reflux activity. The quantity and morphometric indexes of a lymphoid structures in a sphincters zone more, than near of a sphincters. Regardless of age, the microanatomy parameters of the lymphoid nodules of the urinary bladder sphincters are greater than outside the sphincter. Thus, in the inner sphincter of the urethra, the amount of lymphoid nodules increases 1.5 times compared to the external zones of a sphincters. Dimensional indicators in the right and left ureteral sphincters are almost the same. It is connected by a similar design of their. In old and senile ages, the lymphoid structures in the urinary bladder sphincters are single or absent.

Keywords: Human urinary bladder, Postnatal ontogenesis, Lymphoid structures, Regional features

MANAGEMENT OF MALOCCLUSION IN CHILDREN WITH BETA THALASSEMIA MAJOR

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Abstract

Beta-thalassemia major is one of the most common genetic diseases in the group of blood pathologies. İt should be noted that this deases is accompanied by characteristic pathological manifestations, such as craniofacial disorders, leading to aesthetic and functional problems. Orthodontic correction makes a significant contribution to the health improvement of thalassemic patients.

This study has been carried out to evaluate the effectiveness of the orthodontic treatment of a dentoalveolar anomaly by using the Twin block functional appliance. 49 patients with Class II malocclusion aged 10-14 years participated in the research. Observations were performed on the patients who did not have any syndromic and systemic diseases and patients with beta-thalassemia major. The control group included 23 healthy patients. Main group included 26 patients with beta-thalassemia major. Patients had received orthodontic treatment with Twin-block appliance. The duration of orthodontic treatment was 1.5-2 years. The Twin block appliance is used to modify the growth of the lower jaw and correct the ratio of the jaws in the sagittal plane.

As a result of the orthodontic treatment, the lower jaw was displaced forward in both groups. Analysis of cephalometric data of patients of 2 groups revealed a significant difference in indicators, pointing out the anteroposterior relationship of the jaws. As a result of impact of orthodontic forces, there was a statistically significant increase in the parameters SNB, Co-Gn, N-ANS, ANS-Me and N-Me, and a decrease in the overjet value.

Orthodontic treatment of patients with beta-thalassemia major using the Twin-block appliance at the stage of mixed dentition effectively improves the intermaxillary relationship and the functions of the maxillofacial region. Orthodontic treatment is effective in improving inter arch relationships and the orofacial functions.

Keywords: thalassemia, orthodontic treatment, cephalometric data, Twin-block.

EXAMINATION OF ANXIETY LEVELS ACCORDING TO COPD STAGES

KOAH EVRELERİNE GÖRE ANKSİYETE SEVİYELERİNİN İNCELENMESİ

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ÖZET

Giriş: Kronik Obstrüktif Akciğer Hastalığı (KOAH), akciğer ve havayollarının zararlı gazlara ve partiküllere karşı verdiği artmış kronik inflamatuar yanıtla ilişkili ilerleyici obstrüktif akciğer hastalığıdır. Dünyada 2020'li yıllarda ölüm nedenleri arasında 3. sırada yer alması beklenen ve erişkin nüfusun %7-12'sini etkileyen KOAH, temel olarak hava akımı kısıtlanması ile tanımlansa da günümüzde KOAH'ın sadece akciğerlerle sınırlı bir hastalık olmadığı, hastalık ağırlığına katkıda bulunabilen önemli ekstrapulmoner etkileri ve eşlik eden durumları olduğu bilinmektedir. KOAH'ta, aynı yaştaki sağlıklı kişilere ve diğer bazı hastalıklara kıyasla depresyon, anksiyete ve panik atak gibi artmış psikolojik distres oranları bildirilmiştir. Depresyon ve anksiyetenin sıklığı ve KOAH ile ilişkili morbidite üzerine etkilerine rağmen, bu psikolojik sorunlara ve tedavisine daha az dikkat edilmiştir.

Amaç: Çalışmanın amacı GOLD (Global Initiative for Obstructive Lung Disease) 2017 kriterlerine göre farklı gruplardaki KOAH'lı bireylerin anksiyete durumunu incelemekti.

Yöntem: Çalışmaya yaş ortalaması 66.1±9.011 yıl olan 125 KOAH'lı birey dahil edildi. Bireyler GOLD 2017 kriterlerine göre dört grupta incelendi. Bireylerin bilgileri için sosyo-demografik bilgi formu ve anksiyete değerlendirmesi için AIR ölçeği (Anxiety Inventory for Respiratory Disease Scale) kullanıldı.

Bulgular: Farklı KOAH grubundaki hastaların AIR ölçek puanları arasındaki ortalama fark, bu farkın güven aralığı ve istatistiksel anlamlılığı incelendi. Bu sonuçlara göre, A grubundaki hastaların B grubundaki hastalara göre ortalama olarak daha düşük puanlar elde etmesi istatistiksel olarak anlamlı bulundu (**p=0.029**). Ayrıca A grubundaki hastaların C grubundaki hastalara göre de ortalama olarak daha düşük puanlara sahip olması istatistiksel olarak anlamlı bulundu (**p=0.030**).

Tartışma ve Sonuç: KOAH'lı bireylerde hastalığın evresi ilerledikçe anksiyete şiddetinin de arttığı sonucuna varıldı. Anksiyetenin KOAH'lı hastalarda fonksiyel durumu ve genel yaşam kalitesini etkilediği göz önünde bulundurularak, onun değerlendirme parametrelerine eklenmesinin faydalı olacağını düşünüyoruz.

Anahtar Kelimeler: Kronikakciğer hastalığı; Anksiyete; Kardiyorespiratuar uygunluk; Adölesan

ABSTRACT

Introduction: Chronic Obstructive Pulmonary Disease (COPD) is a progressive obstructive pulmonary disease associated with an increased chronic inflammatory response of the lungs and airways to harmful gases and particles. Although COPD, which is expected to be the 3rd cause of death in the world in the 2020s and affects 7-12% of the adult population, is basically

defined as airflow limitation, nowadays it is known that COPD is not only a disease limited to the lungs, but has significant extrapulmonary effects and accompanying comorbidities that may contribute to the disease severity. Increased rates of psychological distress, such as depression, anxiety, and panic attacks, have been reported in COPD compared to healthy individuals of the same age and some other diseases. Despite the frequency of depression and anxiety and their effects on morbidity associated with COPD, less attention has been paid to these psychological problems and their treatment.

Objectives: The study aimed to examine the anxiety status of individuals with COPD at different groups according to the GOLD (Global Initiative for Obstructive Lung Disease) 2017 criteria.

Materials and methods: 125 individuals with a mean age of 66.1±9.011 years were included in the present study. Individuals were investigated at four groups. Socio-demographic information form was used for the information of individuals, and the AIR Scale (Anxiety Inventory for Respiratory Disease Scale) was used for the anxiety assessment.

Results: The mean difference between the AIR scale scores of patients at different COPD groups, and the confidence interval and statistical significance of this difference were examined. According to these results, it was statistically significant that patients at group A had lower anxiety scores as mean than patients at group B (**p=0.029**). In addition, it was also statistically significant that patients at group A had lower anxiety scores as mean than patients at group C (**p=0.030**).

Discussion and conclusion: It was concluded that the severity of anxiety increases as the disease stage progresses in individuals with COPD. Considering that anxiety affects the functional status and general quality of life in patients with COPD, we think that it would be beneficial to add it to the assessment parameters.

Keywords: Chronic lung disease; Anxiety; Cardiorespiratory fitness; Adolescent

GİRİŞ

Kronik Obstrüktif Akciğer Hastalığı'nda (KOAH'ta) akciğer ve havayolları, partiküllere ve zararlı gazlara karşı artmış kronik inflamatuar yanıt vermektedir (1). Bu hastalıkta öksürük, balgam, nefes darlığı, hırıltılı solunum, göğüste sıkışma hissi ve yorgunluk gibi semptomlar ortaya çıkmaktadır. İlerleyici bir hastalık olan KOAH'ta kalıcı hava akımı kısıtlanması görülmektedir (2). KOAH önlenebilir ve tedavi edilebilir özelliğe sahip olan önemli bir sağlık sorunudur. Toplumdaki yaşlı nüfusun oranının artması ve risk faktörlerine daha çok maruz kalınması sebepleriyle, KOAH yükünün de artması beklenmektedir (1).

Mevcut araştırmalardan elde edilen verilerde, global KOAH prevalansının 30 yaş ve üzeri bireylerde %11,7 olduğu belirtilmiştir (3). Dünyada 2020'li yıllarda ölüm nedenleri arasında 3. sırada yer alması beklenen ve 40 yaş ve üzeri erişkin nüfusun %7-12'sini etkileyen KOAH, temel olarak hava akımı kısıtlanması ile tanımlanmış olsa da günümüzde KOAH'ın sadece akciğerlerle sınırlı bir hastalık olmadığı, hastalık ağırlığına katkıda bulunabilen önemli ekstrapulmoner etkileri ve eşlik eden durumları olduğu bilinmektedir (4).

Literatüre bakıldığında KOAH'lı bireyler aynı yaştaki sağlıklı kişilerle ve diğer bazı hastalıklarla karşılaştırıldığında, günlük yaşam aktivitelerinde kısıtlılık, yaşam kalitesinde düşüş, anksiyete, depresyon ve panik atak gibi artmış psikolojik bozukluk oranları göstermişlerdir (5). Depresyon ve anksiyetenin sıklığı ve KOAH ile ilişkili morbidite üzerine

etkilerine rağmen, literatürde bu psikolojik sorunlara ve tedavisine daha az dikkat edilmiştir (6-8).

Semptomlarla ilişkili komorbidite KOAH'ta önemli bir yere sahiptir (5). KOAH'lı bireylerde en sık görülen komorbiditelerden biri anksiyetedir. Yapılan çalışmalardan elde edilen verilerde, anksiyete prevalansının %10 ile %100 arasında değişebildiği gösterilmiştir (9). Literatürde dispne ve öksürük gibi pulmoner semptomlarla ilişkili olan anksiyetenin seviyesi arttıkça, bu pulmoner semptomların daha potansiyel uyaran haline dönüşebildiği bilgisi bulunmaktadır (10-12). Bunların dışında, KOAH tedavisinde kullanılan kısa etkili beta agonist ilaçların yan etkilerinden biri olarak da anksiyetenin seviyesi yükselebilmektedir (11,12). Bu nedenle bu çalışmada farklı gruplardaki KOAH'lı bireylerin anksiyete durumunu incelemek amaçlandı.

GELİŞME

Çalışma, kesitsel bir araştırma olarak dizayn edildi. Çalışmaya başlamadan önce Abant İzzet Baysal Üniversitesi Girişimsel Olmayan Klinik Araştırmalar ve Etik Kurulu'ndan gerekli izinler alındı (2016/79). Araştırmanın içleme kriterlerine uyan ve gönüllü olan bireylere çalışma hakkında detaylı bilgilendirme yapıldıktan sonra bilgilendirilmiş onam formu imzalatıldı.

Çalışmaya Göğüs Hastalıkları Polikliniğine başvuran 125 KOAH hastası dahil edildi. İçleme kriterleri GOLD (Global Initiative for Obstructive Lung Disease) 2017 kriterlerine göre KOAH tanısı almış olma, stabil dönemde olma ve mental bir soruna sahip olmama olarak tanımlandı. Dışlama kriterleri ise atak döneminde olma, kognitif problemi olma ve vasküler, nöromüsküler veya kas-iskelet sistemi hastalıklarına sahip olma olarak belirlendi.

Tanımlayıcı Özellikler

Katılımcıların bilgileri sosyo-demografik bilgi formu ile toplandı. Sosyo-demografik bilgiler olarak ad, soyad, cinsiyet, meslek, yaş, boy, vücut ağırlığı, medeni hal, öğrenim durumu, hastalık süresi, ağrı, geçirilen hastalıklar ve ameliyatlar, kullanılan ilaçlar ve cihazlar, eşlik eden hastalıklar, sosyal güvence, alışkanlıklar, alerjiler, özgeçmiş, soygeçmiş, vital bulgular, sigara içilen yıl sayısı ve günlük içilen sigara paketi sayısı sorgulandı.

KOAH Sınıflandırması

Bireylerin KOAH sınıflandırması GOLD 2017 raporu kriterlerine göre dört grupta yapıldı. Bu rapora göre semptomları değerlendirmek için KOAH Değerlendirme Testi (CAT) ve KOAH Kontrol Anketi (CCQ) kullanılmaktadır. Hastanın bronkodilatör sonrası FEV1 (birinci saniyedeki zorlu ekspiratuar hacim) sonucuna, semptom değerlendirme puanına ve alevlenme geçmişine göre hastalar belirli kategorilerde gruplandırılmaktadır. GOLD A grubu düşük semptom şiddeti ve düşük alevlenme riskine sahip hastaları içerirken, GOLD B grubu yüksek semptom şiddeti ve düşük alevlenme riskine sahip hastaları kapsamaktadır. GOLD C grubundaki hastalar düşük semptom şiddeti ve yüksek alevlenme riskine sahipken, GOLD D grubundaki hastalar hem yüksek semptom şiddetine hem de yüksek alevlenme riskine sahip hastalardan oluşmaktadır (13,14).

Anksiyete Değerlendirmesi

Katılımcıların anksiyete seviyeleri AIR ölçeği (Anxiety Inventory for Respiratory Disease Scale) kullanılarak değerlendirildi. Ölçeğin amacı, KOAH'lı bireylerde anksiyeteyi

değerlendirerek risk grubunu belirlemektir. On sorudan oluşan ölçeğin her sorusu 0 (hiçbir zaman) ile 3 (neredeyse her zaman) arasında puanlanmaktadır. Katılımcılardan bu dört yanıttan kendine en uygun olan yanıtı işaretlemesi istenmektedir. Toplam puan 0 ile 30 arasındadır. Yüksek puanlar KOAH'lı hastaların anksiyete seviyesinin yükseldiğini göstermektedir (15,16).

İstatistiksel Analiz

Tüm istatistiksel analizler PASW (SPSS, versiyon 18.0) programı kullanılarak yapıldı. Elde edilen verilere ait tanımlayıcı değerler kategorik değişkenler için sayı ve yüzde ile belirtilirken, sayısal değişkenler için ortalama, standart sapma, minimum ve maksimum değerleri kullanılarak verildi. Normal dağılıma uygunluğa bakmak için Kolmogorov-Smirnov ve Shapiro-Wilk testleri kullanıldı. Değişkenler normal dağılıma uyum sağladığından dolayı, sayısal değişkenleri karşılaştırmak için Student t-testi uygulandı. İstatistiksel anlamlılık düzeyi $p \leq 0,05$ olarak alındı.

SONUÇ

Araştırmaya katılan 125 KOAH hastasının cinsiyet, yaş, boy, kilo, beden kitle indeksi (BKİ) gibi fiziksel özelliklerine ait tanımlayıcı istatistikler Tablo 1'de gösterilmiştir. Tüm katılımcıların yaş ortalaması 66.1±9.011 yıl, boy uzunluğu ortalaması 1.69±0.065 m, vücut ağırlığı ortalaması 77.29±16.087 kg ve BKİ ortalaması 27.13±5.49 kg/m^2 olarak hesaplanmıştır (Tablo 1). Tablo 2'de hastaların sigara kullanımına göre frekans dağılımları gösterilmiştir. Tablo 3'te hastaların KOAH durumuna göre dağılımları verilmiştir. Bu tabloda gösterildiği gibi hastaların çoğu (%64'ü) GOLD 2017 kriterlerine göre A grubunda bulunmaktaydı (Tablo 3). Tablo 4'te hastaların KOAH gruplarına göre AIR ölçek puanları yer almaktadır. Bu tabloya göre ortalama olarak AIR ölçeğinden A grubundaki hastalar en düşük puanı alırken, C grubundaki hastaların en yüksek puanı aldığı gözlenmiştir (Tablo 4). Tablo 5'te farklı KOAH grubundaki hastaların AIR ölçek puanları arasındaki ortalama fark, bu farkın güven aralığı ve istatistiksel anlamlılığını gösteren p-değerleri verilmiştir. Yapılan analiz sonucunda, A grubundaki hastaların B gruplarındaki hastalara göre ortalama olarak daha düşük AIR ölçek puanlarına sahip olması istatistiksel olarak anlamlı bulunmuştur (Tablo 5, **p=0.029**). Ayrıca A grubundaki hastaların C gruplarındaki hastalara göre de ortalama olarak daha düşük AIR ölçek puanlarına sahip olması istatistiksel olarak anlamlı bulunmuştur (Tablo 5, **p=0.030**). Diğer parametreler arasında istatistiksel olarak anlamlı bir fark bulunmamıştır.

Stabil durumdaki KOAH'lı bireylerde, GOLD 2017 kriterlerine göre A grubundaki hastaların B ve C gruplarındaki hastalara göre anksiyete düzeylerinin daha düşük olduğu sonucuna varıldı. Literatüre bakıldığında KOAH'lı bireylerin aynı yaştaki sağlıklı kişilerle ve diğer bazı hastalıklarla karşılaştırıldığı bir çalışmada, günlük yaşam aktivitelerinde yetersizlik, yaşam kalitesinde azalma, anksiyete, depresyon ve panik atak gibi artmış psikolojik bozukluk oranları gösterilmiştir (5). Ancak bizim çalışmamızdaki gibi KOAH gruplarına göre anksiyete seviyelerinin incelendiği bir çalışmaya rastlamadık. Çalışmamızda KOAH gruplarına benzer sayıda hasta almayı denk getiremedik. Bu sebeple, D grubundaki hastalar ile diğer gruplardaki hastalar arasında istatistiksel olarak anlamlı bir fark gösterememiş olabiliriz. İleriki çalışmalarda her KOAH grubuna benzer sayıda hasta alınarak anksiyete düzeylerinin bu gruplara göre incelenmesini tavsiye etmekteyiz.

Sonuç olarak, KOAH'lı bireylerde hastalığın evresi ilerledikçe anksiyete düzeyinin de arttığı görülmektedir. Anksiyetenin KOAH'lı hastalarda fonksiyel durumu ve genel yaşam kalitesini

etkilediği göz önünde bulundurularak değerlendirme parametrelerine eklenmesinin faydalı olacağını düşünmekteyiz.

Tablo 1. Hastaların fiziksel özellikleri

Değişkenler		**KOAH'lı bireyler (n=125) x±ss (min-mak) / n; %**
Cinsiyet (n; %)	**Erkek**	115; %92
	Kadın	10; %8
Yaş (yıl)		66.10±9.011 (44-79)
Boy uzunluğu (m)		1.69±0.065 (1.50-1.87)
Vücut ağırlığı (kg)		77.29±16.087 (42-120)
BKİ (kg/m^2)		27.13±5.49 (14.2-40.4)

n: frekans, %: yüzde, kg: kilogram, m: metre, x±ss: ortalama ± standart sapma , min-mak: minimum-maksimum, KOAH: Kronik Obstrüktif Akciğer Hastalığı, BKİ: Beden Kütle İndeksi.

Tablo 2. Hastaların sigara kullanımı

Değişkenler		**KOAH'lı bireyler (n=125) n; %**
Sigara kullanımı	Evet	23; %18.4
	Hayır	10; %8
	Bıraktım	92; %73.6
Sigarayı bırakma durumu	1 yıldan daha az	24; %25.8
	1-2 yıl	9; %9.7
	2 yıldan fazla-5 yıldan az	14; %15.1
	5-10 yıl	15; %16.1
	10 yıldan daha fazla	31; %33.3
Sigara kullanma süresi	0-5 yıl	1; %0.8
	6-10 yıl	3; %2.6
	11-20 yıl	12; %10.4
	21-30 yıl	22; %19.1
	30-40 yıl	29; %25.2
	40 yıldan daha fazla	48; %41.7

Günlük içilen ortalama sigara pakedi sayısı	1 paketten az	26; %22.2
	1 ile 2 paket arası	73; %62.4
	2 ile 3 paket arası	14; %12
	3 paketten fazla	4; %3.4

n: frekans, %: yüzde, KOAH: Kronik Obstrüktif Akciğer Hastalığı.

Tablo 3. Hastaların KOAH durumuna göre dağılımları

Değişkenler		**KOAH'lı bireyler (n=125) n; %**
KOAH tanısının ne kadar zaman önce konulduğu	0-6 ay	36; %28.8
	6 ay-1 yıl	11; %8.8
	1-2 yıl	16; %12.8
	2-5 yıl	27; %21.6
	5 yıl ve üstü	35; %28
KOAH sebebiyle son 3 ayda hastahaneye başvurma sayısı	1 kez	69; %55.2
	2 kez	34; %27.2
	3 kez	7; %5.6
	4 ve daha fazla	15; %12
KOAH sebebiyle son 3 ayda hastahaneye yatış yapma sayısı	Evet	15; %12
	Hayır	110; %88
KOAH ile ilgili ilaç kullanımı	Evet	107; %85.6
	Hayır	18; %14.4
KOAH sınıflandırması	A Grubu	80; %64
	B Grubu	30; %24
	C Grubu	4; %3.2
	D Grubu	11; %8.8

n: frekans, %: yüzde, KOAH: Kronik Obstrüktif Akciğer Hastalığı.

Tablo 4. Hastaların KOAH gruplarına göre AIR ölçek puanları

Değişkenler	**KOAH Sınıflandırması**	**KOAH'lı bireyler (n=125) x±ss**
AIR ölçek puanı	**A Grubu**	8.39±5.155
	B Grubu	11.20±7.649
	C Grubu	11.25±1.708
	D Grubu	10.91±7.021

x±ss: ortalama±standart sapma, KOAH: Kronik Obstrüktif Akciğer Hastalığı, AIR: Anxiety Inventory for Respiratory Disease Scale.

Tablo 5. AIR ölçek puanlarının KOAH grupları açısından karşılaştırılması

KOAH Sınıflandırması		**Ortalama fark**	**Ortalama farkların %95 güven aralığı**		**p değeri**
			Alt limit	**Üst limit**	
A Grubu	**B Grubu**	-2.813	-5.328	-0.297	**0.029***
	C Grubu	-2.863	-5.354	-0.371	**0.030***
	D Grubu	-2.522	-5.970	0.927	0.150
B Grubu	**A Grubu**	2.813	-0.297	5.328	**0.029***
	C Grubu	-0.050	-3.434	3.334	0.976
	D Grubu	0.291	-5.051	5.633	0.913
C Grubu	**A Grubu**	2.863	5.354	0.371	**0.030***
	B Grubu	0.050	-3.334	3.434	0.976
	D Grubu	0.341	-7.495	8.177	0.927
D Grubu	**A Grubu**	2.522	-0.927	5.970	0.150
	B Grubu	-0.291	-5.633	5.051	0.913
	C Grubu	-0.341	-8.177	7.495	0.927

KOAH: Kronik Obstrüktif Akciğer Hastalığı, *p≤0,05.

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PECULIZARITIES OF SYNTHSIS OF DNA AS METHOD OF EVALUATION OF GENE FUND OF FRUIT AND BERRY CROPS ON ABSHERON PENINSULAR

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Azerbaijan is one of the main and most ancient regions of developed horticulture and viticulture. In recent years, the production of fruit and berry crops has increased significantly in Azerbaijan. Among the berry plants, the strawberry and jujube plants is of special importance.

The creation of orchards, a comprehensive study of its biological characteristics, and identification of sustainability genes is one of the important issues in Azerbaijan.

Differences of genomes of various varieties of jujube were determined. Ancient varieties are characterized by lowered content of the DNA and structured DNA compared to new varieties. Apparently, these varieties during the process of evolution worked out mechanisms of regulation allowing them to sustain with less amount of the DNA at the expense of reset of repetitions. The new varieties are characterized by high amplitude of inter-variety oscillations according to the DNA synthesis. Differences between these groups according the DNA synthesis in the mitochondrial and chloroplast systems were noted.

The gene fund of strawberry is represented by varieties with different paces of the DNA and RNA synthesis. High content of the DNA and RNA characterize varieties, which are highly resistant to the salt and osmotic stresses. Low content testify about low stress resistance of varieties, while intermediate content about medium resistance.

Collections of jujube and strawberry are polymorphic according to number of chromosomes are represented by diploid, triploid, tetraploid and hexaploidand samples.

Two new local large-fruit varieties of jujube were created. Stress resistant forms of strawberries were singled out.

Keywords: collection, jujube, strawberry, genome, DNA, RNA, chromosome complex

TEMPERATURE EFFECT ON THE PHOTOLUMINESCENCE INTENSITY IN $EUGA_2S_4$ AND $EUGA_2S_4:ER^{3+}$

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Abstract

The photoluminescence (PL) spectra of $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ have been studied in the range 78-500K. The spectra show a band at 545nm, due to the $4f_65d \rightarrow 4f^7(^8S_{7/2})$ transition. With increasing temperature, the full with at half maxsimum Q(T) of the PL band increases. Over the entire temperature range studied Q(t) is a linear function of $T^{1/2}$. Emission intensity vary exponentially with temperature. The luminescence quenching energies coincide (0.1eV) within the error of determination.

The purpose of this work to study the temperature effect on the photoluminescence intensity in $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$.

$EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ were synthesized solid-state reaction between EuS and Ga_2S_3, with or without Er, was run at 1200K for 3h in a silica tube pumped to $1{,}33 \cdot 10^{-2}$Pa. In both procedures, Eu(1,3,5 or 7 mol%) was introduced into the starting mixture in the form of EuF_3.

The PL of $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ was excited by the 420nm dye laser line. The intensity of the 545nm PL peak was measured from 78 to 500K.

The luminescence excitation spectra of $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ crystals were studied earlier in the range 250-520nm. These materials have identical excitation spectra, with a peak at 485nm. For both materials, the PL band to considerably broaden with increasing temperature. Analysis of the data in that the PL bands of $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ differ markedly in full width at half maximum Q(T) in the temperature range 78-500K.

The plots of Q versus $T^{1/2}$ have the form of straight lines with different slopes. The slope for $EuGa_2S_4$ is seen to be slightly sleeper than that for $EuGa_2S_4:Er^{3+}$. At shot times after excitation($t<5 \cdot 10^{-7}$s), the PL intensity decreases rapidly. The PL intensity in $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ is an exponential function of time: $I=I_0e^{-t/\tau}$.

Keywords: photoluminescence, emission intensity, temperature.

EFFECT OF THE NERVOUS SYSTEM ON THE AGING PROCESS

QOCALMA PROSESİNƏ SİNİR SİSTEMİNİN TƏSİRİ

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Xülasə

İnsan ömrünün uzunluğu bir sıra sosial və iqtisadi amillərlə, sağlamlıq vəziy-yəti və həyat tərzi ilə, eləcə də fiziki əmək qabiliyyəti və onun xarakteri ilə bağlıdır. Qocaların sinir sistemində baş verən funksional və struktur dəyişikliklər bilavasitə qocalma proseslərinin nəticəsidir. Neyronların ölümü baş beynin kütləsinin və funksiyalarının azalmasına səbəb olur, demensiyalar baş verir. 30 yaşlı insanla müqayisədə 90 yaşlının neyronlarının miqdarı normal halda ən azı 15% azalır. Kəmağıllılıq və ya demensiya baş beynin fizioloji dəyişiklikləri ilə əlaqədar yaranan psixi deqradasiyaların bir formasıdır.

Qocalığın gedişində özünü kəskin surətdə biruzə verən faktorlardan biri də emosiyalardır. Emosıyalar mənfi və müsbət ola bilər. Müsbət emosiyalar insanlara zövq, gülüş, sevinc və s. gətirdiyi halda mənfi emosiyalar sanki insanı dəli edir. Xüsusilə sinir sistemi zəif olan və öz hisslərini əla ola bilməyən adamlar üçün bu daha xarakterdir.

Sinir sisteminin travmaları insanda mənəvi, psixoloji fiziki ve iqtisadi böhranlar yaradır, cəmiyyətdən təcrid edir, vərdiş etdiyi işə, sənətə qarşı soyuqluq əmələ gəlir.

Tədqiqata işi Gəncə şəhərində yaşayan herontoloji yaş qrupuna mənsub ahıl və qoca yaşlı insanlar üzərində aparılmışdır. Tədqiqata10 kişi, 15 qadın olmaqla 25 nəfər cəlb olunmuşdur. Onlardan bir neçəsi Kəlbəcər, Laçın və Cəbrayıl rayonunda doğulub böyümüş insanlardır. 1993-ci ildən Gəncə şəhərində məskunlaşmışlar. Doğma yurd yuvalarından didərgin düşmək, yaxınlarını itrmək, çətin vəziyyətdə yaşamaq həmin insanların sağlamlığına dərin iz qoymuşdur. Psixi və mənəvi yüklər onların ömrünün qısalmasına və qocalığın sürətlənməsinə səbəb olmuşdur. Onların bəzilərində saçların daha tez ağarması, dəridə qırışların əmələ gəlməsi daha intensiv getmiş, həyata baxış dəyişmiş, həyata qarşı laqeydlik yaranmışdır.

Sağlamlığın qorunması hər yaş dövründə vacibdir.

Açar sözlər: sinir sistemi, qocalıq, travma.

ABSTRACT

Longevity depends on a number of social and economic factors, health status and lifestyle, as well as physical ability and character. Functional and structural changes in the nervous system of the elderly are a direct result of the aging process. The death of neurons leads to a decrease in brain mass and function, dementia occurs. The number of neurons in a 90-year-old is normally reduced by at least 15% compared to a 30-year-old. Dementia or dementia is a form of mental degradation caused by physiological changes in the brain.

Emotions are one of the factors that manifest themselves sharply in old age. Emotions can be negative and positive. Positive emotions give people pleasure, laughter, joy and so on. Negative emotions drive a person crazy. This is especially true for people with weak nervous systems and inability to control their emotions.

Traumas of the nervous system create moral, psychological, physical and economic crises in a person, isolate him from society, and create a coldness towards the work and art he is accustomed to.

The study was conducted on elderly and elderly people belonging to the gerontological age group living in Ganja. 25 people, including 10 men and 15 women, were involved in the study. Some of them were born and raised in Kalbajar, Lachin and Jabrayil districts. They have settled in Ganja since 1993. Being expelled from their native lands, losing loved ones, living in a difficult situation have left a deep mark on the health of these people. Mental and spiritual burdens have shortened their lives and accelerated old age. In some of them, the hair turned gray faster, the formation of wrinkles on the skin became more intense, the outlook on life changed, and indifference to life appeared.

Protecting your health is important at any age.

Keywords: nervous system, old age, trauma.

QUALITY OF LIFE OF PATIENTS UNDERGOING SUBTOTAL COLECTOMY FOR CHRONIC COLOSTAS

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İntroduction
The aim of the study was to determine the quality of life of patients undergoing subtotal colectomy for chronic colostasis.
Material and methods. 100 patients after chronic colostasis (CC) of subtotal colectomy (SCE) due to colostasis were examined. The length of the postoperative period varied from 1 to 7 years. There were 45 women and 5 men, whose average age was 41 years (from 17 to 71 years). The quality of the SEE operation was assessed using the Visick scale, the quality of life (QOL) - on the basis of a questionnaire modified by us by Japanese authors.
Results: good results of Visick surgery were observed in 56% of patients, satisfactory in 38% and unsatisfactory results in 6% of patients; good QOL was determined in 60.2% of patients, satisfactory in 20.8%, and unsatisfactory in 10% of patients. Patients with excellent health had regular bowel movements, no more than 2 times a day; no symptoms of pain in the abdomen or rectum were noted, and no weight loss was observed. At the same time, the results of the QOL assessment carried out according to the questionnaire differed from the results of the quality of the SEQ: good QOL results were found in 60.2%, satisfactory in 20.8% and unsatisfactory in 10% of patients. As the postoperative period increases (more than 5 years) after subtotal colectomy, an improvement in the quality of both the operation and the life of patients is noted. As the postoperative period increases over 5 years, there is an increase in the quality of both the operation and the quality of life of patients.

Conclusions : 1. After SEE performed for CC, good results of Visick surgery were observed in 56% of patients, satisfactory - in 38% and unsatisfactory results - in 6% of patients.

2. In patients who underwent SCE in the long-term postoperative period, good QOL is determined in 60.2% of patients, satisfactory in 20.8% and unsatisfactory in 10% of patients.

3. With the increase in the postoperative period of SEC for more than 5 years, there is an increase in the quality of both the operation and the life of the patients.

Keywords: chronic colostasis , subtotal colectomy ,quality of life .

RADIOLOGY VISUALIZATION OF GIANT CELL TUMOR AFTER RADIOTHERAPY

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Giant cell tumor is a benign locally aggressive tumor with bone destruction and with malignant potential. It usually develops near a joint at the end of the bone. Most often occur in young adults in the long bones. Cause of this tumor is unknown. Diagnostic tests include x-ray, biopsy and bone scans. As a salvage treatment often oncologists use radiotherapy.

The aim of this paper is to describe radiology x-ray picture after radiotherapy and analyze how tumor size is change. Study includes 17 patients (9 female, 8 male) with histologically proven giant cell tumor of bone. The age of patients ranged between 15 and 38 (mean, 24 years). For all this patients was chosen radiotherapy method. Size of tumor varied from 3 to 16 cm (mean 7) and there were different grade stages. After treatment in some patients we saw sclerotic changes on x-ray, skin necrosis and dysfunction in joint. Sclerotic changes were more in cases where tumor was more than 5cm in diameter. In the present result we can say that radiotherapy better with low dose and in tumors smaller than 5cm. Some diseases included in differential diagnosis with giant cell tumor. They are aneurysmal bone cyst, brown tumor of hyperparathyreoidism and fibrous defects. To avoid confusion in cases we need to take into account site of lesion and patients age.

Keywords: tumor, bone, x-ray, radiotherapy

A NEW VIEW ON THE IMMUNO-PATHOPHYSIOLOGY OF INTERSTITIAL CYSTITIS

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Interstitial cystitis / painful bladder syndrome is a chronic disorder of unknown etiology that causes pressure, pain and discomfort in the pelvic region. The most significant achievement in understanding the mechanisms of the disease is the theory of the formation of a defect in the glycosaminoglycan layer of the bladder mucosa and the so-called "leakage" of urine through this defect into the submucosa. Based on these positions, we proposed a completely new model of interstitial cystitis in animals with the introduction of own urine into the submucosa of the bladder. For this purpose, 22 white New Zealand rabbits weighing 1500-2000 grams were used. The animals were divided into 2 groups: the 1st group - 15 rabbits, which were injected own urine into the submucous o (0.5 ml), the 2nd group - the control group - 7 rabbits - physiological saline in an equivalent volume was injected into the submucosa. After a week, the bladder of the rabbits was surgically removed, ultrathin sections were prepared for the electron microscopy. Electron microscopic examination showed a complex of pathomorphological changes in the first group of animals. In the experimental group, along with perivascular infiltration with neutrophils and lymphocytes, activated platelets in the lumen of venules were also noted in the lamina propria. Detection of plasma cells indicates the immune nature of the disease. With a microscope magnification x 80 thousand, gaps in between the urotheliocytes were found. The creation of a new model of interstitial cystitis and the discovery, along with neutrophils and lymphocytes, of plasma cells and narrow gaps between urotheliocytes indicates the immune genesis of the pathophysiology of this disease.

Keywords: interstitial cystitis, bladder mucosa, electron microscopy

STUDY OF DEPRESSION, ANXIETY AND STRESS TOLARANCE IN CHRONIC GYNECOLOGICAL PATIENTS.

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The goal of this research is to study the depression, anxiety and resistance to stress in women with chronic gynecological diseases.

Objectives: To determine the indicators of depression, anxiety and stress in patients with chronic gynecological diseases. Development of recommendations for the provision of assistance in the field of psychological health for the specified group of patients.

Materials and methods: The study involved 60 patients suffering from various gynecological diseases. The DASS-21 scale was used to determine depression, anxiety, and stress in patients. The Life Distress Juventory survey was conducted to study the quality of life of patients suffering from chronic gynecological diseases.

Statistical calculation of the results obtained during the study was performed via SPSS program.

All examined patients participated in the study volunteerly and were informed about the goals and possible risks of the study.

Conclusions: The research shows that chronic gynecological patients are more likely to suffer from depression, anxiety and stress than the general population. In terms of quality of life, the study showed the most negative attitudes towards virtually all areas of quality of life beyond education, employment and attitudes towards religion.

The influence of changes in gynecological diseases on women's psychology leads to the appearance of symptoms. During the research process, the application found that anxiety, depression, somatization are more pronounced in this group of patients. At the same time, the research examined the adaptation mechanisms specific to gynecological patients. The most common adaptation mechanisms used by patients are religion orientation and positive approach strategies. These two approaches can be evaluated as positive circumstances. Both adaptation mechanisms help a person to control himself during stress and to be positive about what is happening around him.

Thus, it can be concluded that it is necessary to take into account the mental state and adaptation mechanisms when treating gynecological patients. In view of the above, we propose the following recommendations aimed at reducing the stress of depression and anxiety in patients with chronic gynecological diseases.

Keywords: depression, anxiety, stress, ginecology

SEASONALITY IN MORBIDITY ASSOCIATED WITH COVID-19 AMONG THE POPULATION IN BAKU

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At present, the clinical, immunological and epidemiological aspects of the course of Covid-19 infection, which has become a pandemic in more than 200 countries around the world, have been studied in numerous studies. There are various theories about the role of climatic factors in the epidemic spread of Covid-19 infection. Some researchers say the infection is more prevalent, especially during the winter months, while others say it is not seasonal.

The purpose of the present study was to conduct a seasonal epidemiological analysis of morbidity associated with Covid-19 among the population in Baku. For this purpose, the dynamics of the morbidity associated with Covid-19 infection in children, adults, men and women in Baku in 2020 was analyzed by months and seasons (spring, summer, autumn) during the year. Daily morbidity data with Covid-19 were taken from the official websites of the Coronavirus info Azerbaijan.

The epidemiological analysis shows that in Baku in 2020, there were 218697 persons morbidity associated with Covid-19 patients, there were 10.936 children and 207.761 adults among them. Of the patients, 95.275 were men and 121.422 were women. Among the total patients, the first epidemic increase was 625.9 ± 5.2 people per 100000 people in July, and the

second epidemic increase was 4253.0 ± 13.6 people per 100000 people in December. During the period under review (March-December 2020) among men and women, as well as children, the highest morbidity associated with Covid-19 was recorded in July and December. A study of the seasonal characteristics of morbidity associated with Covid-19 found that the specific gravity of the disease among both children and adults peaked in the fall - 1,873.4 ± 17.9 per 100000 people and 12,154.8 ± 26,7 people respectively.

The epidemiological analysis led to the conclusion that morbidity associated with of Covid-19 among the population in Baku is recorded throughout the year and in each season, but the maximum incidence occurs in the autumn.

Keywords: Covid-19, seasonality

SOME FEATURES OF THE REPRODUCTIVE SYSTEM IN GIRLS SUFFERING FROM CHRONIC TONSILLITIS

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The prophylactic direction of gynecology plays an exceptional role in protecting women's health. Studies have shown that the reproductive system, which develops during puberty, is very sensitive to various adverse environmental factors, including chronic tonsillitis (CT), which is more common. (Тарасенко Н.С. и друг., 1977). In this case, along with physical developmental disorders in girls with CT, in 60% of cases (Сларискиий А.Н. 2000) can be found various pathologies of the reproductive system (dysfunctional uterine bleeding, hypomenstrual syndrome, amenorrhea II). This often creates a favorable environment for infertility later (Захарова А.В. и друг., 1981).

Exacerbation of CT and its transition to more severe forms occurs at the age of 8-14 years, ie during the period of activation of the hypothalamus - pituitary - adrenal gland - ovarian system (Антипина Н.Н.и друг., 1983).

There are two clinical forms of chronic tonsillitis: In the compensated form, angina occurs 3-4 times during the patient's lifetime, often lasting without obvious clinical signs. Angina in the form of decompensation is observed with a high temperature and occurs 3-5 times a year.

Based on the relevance of the topic, we studied the features of the pathology that occurs in the formation of the reproductive system in 42 patients aged 12-18 years, depending on the clinical forms of CT.

All patients were divided into 2 groups according to the form of compensation (I gr) and decompensation (II gr) of CT. Menarche was approximately the same in both groups and did not differ much from healthy girls. In both groups of girls, the infection index (6.6% and 7.2%) was twice as high as in the control group (3.2%).

In the morphogram, the intersexual type was more common (43.2% vs. 46.5%) in group II. Juvenile uterine bleeding (JUB) was the most common (46.2%) in group I, hypomenstrual syndrome and amenorrhea in group II (37.2% and 37.5%), respectively.

In 30.8% of cases on the EEG in both groups (especially in group II) the presence of pathological changes in diencephalic structures was noted. Against the background of prolactinemia in the blood, FSH and LH levels were lower than in the control group. Changes in EEG and low levels of gonadotropins indicate a central genesis of menstrual dysfunction. It is referred to in the literature as hypothalamotonsiliogenic syndrome (Славский А.Н. 2009). In girls with YUB on USM (I gr.), the size of the ovaries and uterus was within the normal range in some patients, and in most cases the latter was observed to grow. In all girls of group II, the size of the ovary was slightly larger due to multifollicular attachments.

Thus, the results show that in various clinical forms of chronic tonsillitis, menstrual dysfunction in girls is central. Changes in the hypothalamus lead to a decrease in the body's adaptive response and disruption of hemostasis. Therefore, timely and comprehensive treatment measures serve to prevent the deepening of the process.

Keywords: chronic tonsillitis (CT), hypothalamic pituitary system, reproductive function.

EPIDEMIOLOGICAL CHARACTERISTICS OF TRIPLE-NEGATIVE BREAST CANCER IN MOUNTAINOUS SHIRVAN ECONOMIC REGION

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Every year 1.1 million cases of breast cancer and 411 000 deaths among women are observed in the world. The highest incidence is in the United States, Canada, France, Israel, Switzerland, the Baltic States, and the lowest in Japan, Central Asia and Africa. Also, 1751 new cases of BC were recorded in the Republic of Azerbaijan in 2015. The number of registered patients was more than 10,000. In the research retrospective materials for 2010-2016 and prospective materials for 2017-2019, medical documents, pathomorphological, laboratory materials will be used.

In Mountainous Shirvan economic region the extensiveness was 1,7%. The region-wide intensity indicator was 1,9%. The prevalence rate for triple-negative breast cancer in the studied region was $7,6^{0}/_{0000}$. The total mortality rate in the region was $2,8^{0}/_{00}$ and the lethality indicator was 33,3%. In Mountainous Shirvan economic region aggression rate was calculated to determine the incidence of triple-negative breast cancer. The region-wide agressiveness indicator was 1,5.

When calculating the standardized rate of triple-negative breast cancer in the region, it was determined that this figure has increased in women aged 50-59 years and the standardized indicator was $1,2^{0}/_{0000}$. This figure for the whole region was $1,8^{0}/_{0000}$ regardless of age. Due to the high level of standardized rates in women aged 50 -59 years, they should be given special oncological care by practicing health care physicians.

Keywords: triple negative, breast cancer, incidence, mortality.

EFFECT OF NACI ON PHYSIOLOGICAL CHARACTERISTICS OF MAIZE (Zea mays L.) GENOTYPES

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Abstract

Salinization of soils is one of the main environmental factors that reduce the growth, development and productivity of plants, including maize. Currently, about 20% of the world's soils are subject to varying degrees of salinization. Maize (Zea mays L.) is one of the important crops and grown in many countries of the world. At present, there are numerous works devoted to the study of the effect of salts on the physiological and biochemical processes of maize plants with the aim of obtaining salt-tolerant varieties, but this issue is still under study. The aim of this work was to study the effect of different concentrations of sodium chloride on the physiological characteristics of maize genotypes.

The effect of 50 and 100 mmol NaCl concentrations on seed germination, the content of green pigments in seedlings, and on the activity of photosystem 2 in seedlings of maize varieties Zagatala 420, Zagatala 514, Zagatala 68 and Gurur and hybrid Gurur x Zagatala 68 was studied. Plant seeds were germinated under laboratory conditions in Petri dishes and pots with soil using 50 and 100 mmol of sodium chloride solutions. In two-week old seedlings determined the number of photosynthetic pigments and the activity of photosystem II. High concentrations (100 mmol) of NaCl reduced seed germination, pigments number, and photosystem II activity. At a salt concentration of 100 mmol, an increase in the carbohydrate content was noted. Varieties Gurur and Zagatala 68 and their hybrid “Gurur x Zagatala 68” were more tolerant compared to varieties Zagatala 420, Zagatala 514.

Keywords: maize genotypes, NaCl, chlorophyll, carotenoids, photosystem II,soluble sugars.

TEMPERATURE EFFECT ON THE PHOTOLUMINESCENCE INTENSITY IN $EuGa_2S_4$ AND $EuGa_2S_4:Er^{3+}$

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ABSTRACT

The photoluminescence (PL) spectra of $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ have been studied in the range 78-500K. The spectra show a band at 545nm, due to the $4f_65d \rightarrow 4f^7(^8S_{7/2})$ transition. With increasing temperature, the full with at half maxsimum Q(T) of the PL band increases. Over the entire temperature range studied Q(t) is a linear function of $T^{1/2}$. Emission intensity vary exponentially with temperature. The luminescence quenching energies coincide (0.1eV) with in the error of determination.

The purpose of this work to study the temperature effect on the photoluminescence intensity in $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$.

$EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ were synthesized solid-state reaction between EuS and Ga_2S_3, with or without Er, was run at 1200K for 3h in a silica tube pumped to $1{,}33 \cdot 10^{-2}$Pa. In both procedures, Eu(1,3,5 or 7 mol%) was introduced into the starting mixture in the form of EuF_3.

The PL of $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ was excited by the 420nm dye laser line. The intensity of the 545nm PL peak was measured from 78 to 500K.

The luminescence excitation spectra of $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ crystals were studied earlier in the range 250-520nm. These materials have identical excitation spectra, with a peak at 485nm. For both materials, the PL band to considerably broaden with increasing temperature. Analysis of the data in that the PL bands of $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ differ markedly in full width at half maximum Q(T) in the temperature range 78-500K.

The plots of Q versus $T^{1/2}$ have the form of straight lines with different slopes. The slope for $EuGa_2S_4$ is seen to be slightly sleeper than that for $EuGa_2S_4:Er^{3+}$. At shot times after excitation($t<5 \cdot 10^{-7}$s), the PL intensity decreases rapidly. The PL intensity in $EuGa_2S_4$ and $EuGa_2S_4:Er^{3+}$ is an exponential function of time: $I=I_0e^{-t/\tau}$.

As the temperature is lowered from 500 to78 K the slope of the plot Inl versus t increases.

Keywords: photoluminescence, emission intensity, temperature.

EFFECT OF PH ON DELAYED EMISSION OF CHLOROPHYLL IN PHOTOSYSTEM II

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Oxidation-reduction reactions initiated in photosystem II (PSII) through absorbing light quanta leads to the reduction of plastoquinone and oxidation of water molecules with concomitant release of molecular oxygen to the atmosphere and protons into the lumen of thylakoids. Mn_4CaO_5 cluster, Tyr^{161}, and His^{190} located in the lumen phase, as well as, electron acceptors (Q_A, Q_B) in stroma play an important role in the regulation of PSII electron transport. The study aimed at clarification of the dependence of electron transport in PSII on the pH. Membrane fragments enriched with PSII reaction centers (BBY particles) were used in the experiments. The photochemical activity was monitored by measuring the amplitude of delayed emission (ms component) of chlorophyll.

Delayed emission (DE) of Chl was measured in a wide pH range (pH 2.6-9.0), in active PSII preparations and preparations that lost their oxygen release activity by removing Mn_4CaO_5 cluster and peripheral proteins PsbO, P, Q. In both cases, the pH dependence of DE occurred with the same regularity: the amplitude of DE increased in the pH range of 2.6-5.0 and was maximum at pH ~5.0, decreasing symmetrically in the pH range of 5.0-8.5 with a subsequent increase in pH.

The changes in DE at pH range >5.0 were ascribed to the acceptor side (on quinone side) limitations of electron transfer while changes at the pH<5.0 to the limitation at the donor side of PSII, probably through the Tyr^{161}-His^{190} proton transfer pathway.

Keywords: photosystem II, delayed emission, pH

HISTORY OF STUDY OF SOME TYPES OF ALCEA L

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In modern times, the development of plant resources, the introduction of medicinal plants, their efficient use in the national economy, the study of the ontogenesis of species are of great scientific and practical importance. Therefore, it is important to study and introduce Alcea L. species in detail in the culture. Out of about 60 species of Alcea L. distributed in the Mediterranean and Caucasus countries, 9 species are found in Azerbaijan, 1 of which is in culture. These species are mainly found in many regions of Azerbaijan on dry rocky slopes in the middle mountain belt, among weeds. Some of the species we studied (A. kusariensis, A.hyrcana) are included in the "Red Book" of the Republic of Azerbaijan as a rare species. These species are not only valuable food, vitamins and medicinal value, but also decorative, medicinal, dye plant.

Introduced for cultivation in Absheron, Alcea L genus is a perennial herbaceous plant, up to 80-250 cm in height, with white, yellow and red flowers. Sometimes the flowers are striped and spotted. The broad and round leaves are heart-shaped. Grows well in sunny places and on fertile soils. It blooms and bears fruit in July, August and October. Flowers remain until the end of August. Propagated by seeds, it is a water-resistant (xerophyte), light-loving (heliophyte) plant with low water supply.

Keywords: introduction, xerophyte, heliophyte

RESULTS OF THE COMBINED USE OF PERCUTANEOUS CORONARY INTERVENTION AND DRUG REVASCULARIZATION IN PATIENTS WITH CORONARY ARTERY DISEASE WORKING IN ENVIRONMENTALLY CHALLENGING CONDITIONS

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The **aim** of the study was to evaluate the effect of the combined use of medicines in combination with percutaneous coronary intervention (PCI) for ecological endotoxicosis in patient stable angina pectoris of functional class IV

Materials and research methods. Examined 50 patients with stable angina pectoris of the IV functional class at the age of 56.7±1.20. The patients were randomized into 2 groups of 25 people each. In the 1st group was given medicines and PCI was performed a day later. In group 2 only PCI was performed. In all groups, the degree of econdotoxicosis (AMP) was determined, the end systolic volume and end diastolic volume, ejection fraction were studied using Doppler echocardiography. Restenosis was detected by repeated coronary angiography, ST-segment elevation ECG and repeated anginal pain. The traced dynamics of systolic and diastolic blood pressure, features of the clinical course of stable angina of IV functional class.

Results. During treatment in groups I central hemodynamic parameters stabilize, the degree of eco-endotoxicosis decrease, LV systolic function improves, and EF increases. In the first group, one patient had a repeated attack of anginal pain. In the group performed only by PCI, 3 patients developed an attack of anginal pain, 3 - restenosis and 1 patient died.

Conclusions. The results of this study show that the combined use of drug therapy with PCI allows one to obtain a prognostically positive result, in contrast to the separately performed PCI in stable angina pectoris of functional class IV in patients working in ecologically challenging conditions.

Key words: eco-endotoxicosis, stable angina pectoris, drug therapy, PCI

EFFECT OF GAMMA RADIATION ON GRAIN QUALITY INDICES OF A BREAD WHEAT (Triticum aestivum L.) GENOTYPE NURLU 99

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Today, as a result of the application of radiation technologies, hundreds of plant species, including wheat, have been developed and varieties with higher quality indices, tolerant to stress and diseases have been obtained. Cultivation of more productive varieties is of great importance for feeding the growing human population.

In the presented research, dry seeds taken from the bread wheat (Triticum aestivum L.) genotype Nurlu99 were exposed to pre-sowing irradiation with 10 and 50Gy doses of γ-rays and grown under drought and watered conditions.

The effect of radiation doses on the technological quality of grain was analyzed. Vitreousness for the watered plants did not depend on the dose. Gluten levels increased by 3% at 10 and 50Gy doses compared to controls. Although at 10Gy, the gluten deformation index (GDI) was 8% lower than in the control variants, it increased by 4% at 50Gy. Sedimentation was reduced in both samples exposed to radiation compared to the control plant. This decrease was 26% and 21%, respectively. The amount of protein increased by 22.7% and 28.3%, respectively, compared to control plants at both radiation doses. At a dose of 10Gy, the mass of 1000 grains was found to be 5% higher than that of the control plants, and at a dose of 50Gy, it was almost the same as the control.

In the irradiated variants grown under drought, the vitreousness increased by 17% and 20% compared to the drought+control and reached the watered+control variants. The parameter for the drought+control was 13% smaller than the watered+control variants. The amount of gluten in drought+control and drought+10Gy variants was the same as in the watered variants. However, it increased by 17% in the drought+50 Gy variant. While the GDI was 11% less than in the drought+control and watered+control variants, the irradiated variants were almost at the level of the watered irradiated variants. Sedimentation was reduced by 35% and 20%, respectively, in both drought+irradiated variants. The amount of protein increased by 15% at a dose of 50Gy. There was no change in the mass of 1000 grains.

According to the results, the irradiation of the seeds leads to a decrease in sedimentation and an increase in the protein and gluten content in the watered variants of the Nurlu99 bread wheat genotype. In the drought variant, seed irradiation eliminates the effect of drought stress on grain quality.

Keywords: Wheat, radiation, gluten, protein

DIFFERENTIATED APPROACH TO THE NUTRITION OF PREMATURE BABIES

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Premature babies require special nutrition and therefore their body needs additional help for full growth, which they should have received in the womb.

Purpose of the study. Reduce the possibility of developing necrotizing enterocolitis (NEC) and its complications.

Materials and methods. 92 preterm infants were examined, including 61 with very low body weight (VLBW) and 31 with extremely low body weight (ELBW). The gestation period was 29–33 weeks, the average weight was 1278 ± 98, the height was 38.6 ± 3 cm. From the 1st day of life, newborn infants received balanced parenteral nutrition and minimal enteral nutrition. Priority was given to breastfeeding.

Results. When choosing a milk formula, preference was given to the following composition: the presence of hydrolyzed protein with a predominance of whey fraction (70%), the presence of 30% easily degradable triglycerides in the fat component, an adequate content of polyunsaturated fatty acids, a reduced amount of lactose (up to 65%), a corrected content of minerals and vitamins. Newborn babies were divided into three groups: 55.5% were breastfed only (51), 37% were supplemented with fortifiers for an additional purpose (34), 7.5% were artificially fed only (7). In children who received special adapted formulas for premature infants, only 3 of them had an intolerance to the product associated with the development of dysfunction of the gastrointestinal tract (regurgitation, colic, diarrheal syndrome). In 3 patients with ELBW, the initial symptoms of NEC were noted, which quickly disappeared after a temporary cessation of feeding with the formula, the volumes increased slowly. A month later, children who were breastfed using fortifiers (group 2), and children who were artificially fed (group 3) differed little in physical parameters, they basically corresponded to age indicators, although children who were only breastfed (group 1) in terms of height and weight indicators, the percentiles in the table were low. At discharge, children in three groups corresponded to post-conceptual age (in terms of indicators, they were within the 9-25 percentiles in the presence of mixtures, and the children of the 1st group were within about 9 percentiles). Neurological features in both groups were due to the severity of the condition at birth. However, in view of the relatively greater growth, the children of the 2nd group developed anemia earlier.

Conclusion. Thus, early initiation of trophic and minimal enteral nutrition, as well as the use of appropriate adapted mixtures and fortifiers for feeding premature babies, helps to reduce the risk of developing NEC in premature babies.

Keywords: preterm, necrotizing enterocolitis, extremely low body weight, very low body weight.

DETERMINATION OF SOIL FERTILITY BASED ON A STATIC ASSESSMENT

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Abstrakt

The paper deals with testing the hyporthesis of normal distribution of total set as the main H_0 hyperthesis when assessing the fertility of Ajinour steppe soils based on empric agrochemical parameters according to the Pearson criterion. It was determined that three is no reason to refuse the hypothesis on distribution of the prior there parameters, of the sets , consisting of pH, humus and nitrogen by the normal distribution principle. In other words, empiric and theoretical frequencies make a slight (random) difference.

Using the reliability theory, when assessing the fertility of Ajinour steppe soils assuming that the total set consisting of empiric parameters obtained as H_0 zero hypothesis is subjected to normal distribution principle, the calculations were carried out and as a result, in 30 cm upper layer the fertility probalility was $P_{30} \approx 0{,}75$; in 0-60 cm $P_{30} \approx 0{,}51$; layer in 0-90 cm layer $P_{90} \approx 0{,}61$. The fact that in 0- 60 cm layer the fertility is relatively small than in 0-90 cm layer, depends on the fact that distribution probalilyty of the prior elements, mainly of pH , humus and unitrogen directly affecting the fertility of the soil in that layer was small.

As the fertility in experimental field soils causes nonlinear dependence on depth, makes necessary to test normal distribution hypothessis of total set as the main hypothesis on the basis of Pearson criterion.

To this end validity of empic disrtibutions of prior parametres affecting the soil fertility as pH , humus and nitrogen on 0-90 cm layer by the following data was tested by the Pearson criterion. In all there cases, as the condition $\chi_m^2 < \chi_b^2$ is satisfied there is no reason to refuse the hypothesis on distribution of empiric distributions by the normal distribution rule.

Keywords: Fertility, cut, agrochemical parameters, reliability, mathematical statistics.

GENOTYPIC VARIABILITY OF WHEAT DURING SCREENING OF ITS RESISTANCE TO HIGH TEMPERATURES

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ABSTRACT

Ambient temperature is one of the environmental factors that has the strongest impact on the life of plants and their productivity. Despite the significant amount of accumulated experimental data, the study of the features and mechanisms of plant response to high temperatures is still relevant. Currently, due to climate change, adaptation problems under the influence of high temperatures of varying intensity are not fully understood.

The study of the formation of tolerance to exposure to temperatures of different intensities will allow a better understanding of the mechanisms by which changes in intensity increase the resistance of plants and their ability to withstand adverse conditions without destructive consequences. In this case, it is important to take into account the fact that the climate change is fluctuating. It is necessary to select from the existing promising genotypes and use forms and varieties that have wide adaptability for use in the selection practice of donors and especially in vitro by cell biotechnology methods. It has now been established that the responses of wheat plants to temperature effects for a number of physiological, biochemical and molecular genetic indicators change not only quantitatively, but also qualitatively. Most of the changes are non-specific, and some are specific.

The purpose of the study was to screen wheat varieties against the effects of high temperatures of different intensities. Stress was generated based on the classification of soft, medium, and hard stress. For screening and selection of varieties, average stress of $30\text{-}35^0$ C was used. The selected "average stress" parameters can more objectively assess the adaptation and resistance of wheat at the general organism level. Six bread and durum wheat varieties were studied, and three varieties were selected for further study, indicating a greater degree of adaptation.

Keywords: wheat, screening, heat stress, fluctuation

MODEL OF NAVIGATION AND CONTROL OF UNMANNED GROUND VEHICLES USED IN AGRICULTURE

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President of Azerbaijan Ilham Aliyev has repeatedly said that the territories of Azerbaijan liberated from the Armenian occupiers will become a zone of "green energy". It is planned to implement modern concepts of Smart Village. It should be noted that there is no single Smart Village model. It all depends on the needs of the people living in a particular area, as well as on the benefits that the area has, using advanced solutions.

Smart Village is a concept for integrating a variety of ICT to manage rural infrastructure: agricultural activities, transport, education, health care, security systems, etc. Based on the relevance of the problem considered, within the framework of the state program for the creation of Smart Village, this article considers the project "Development of a model and software for navigation and control of ground unmanned vehicles used in agriculture". This project will be implemented jointly with the State Scientific Institution "United Institute of Mechanical Engineering of the National Academy of Sciences of Belarus".

The result of the project will be an experimental prototype of an automatic piloting system with GPS positioning and elements of a video system for recognizing emergency situations. This system will be unified enough to be installed on various chassis of automotive equipment: on a wheeled or tracked mini-tractor with an electric drive, on an ATV (All Terrain Vehicle) with any type of engine. Practical applications can be very different: taking soil samples for precision farming, delivering goods to emergency zones, searching for mines in mined areas, automatic processing of arable land.

The investigated site of land will be determined using reference points with coordinates $(x_0, y_0, z_0,)$, $(x_0, y_1, z_1,)$ and $(x_1, y_1, z_2,)$ and (x_1, y_0, z_3), given using the GPS device. Mathematical models of control and navigation by ground vehicles will be developed.

Keywords: unmanned, vehicle, navigation, GPS, model

POSSIBILITIES OF X-RAY MAMOGRAPHY IN THE EARLY DIAGNOSIS OF NON-PALPABLE MALIGNANT TUMORS OF THE MAMMARY GLANDS.

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Objective: In recent years, breast cancer has consistently takes first place among all women's oncological diseases in the Republic of Azerbaijan and is included in the list of the four most common oncological diseases. In our country, the incidence and mortality of breast cancer among women is getting higher. In modern era, X-ray mammography remains a priority method of diagnosis of various diseases of the breast. As we know, the method of X-ray mammography allows you to visualize the structural changes in the tissues. The method allows the detection of breast cancer at the earliest stages and the detection of asymptomatic non-palpable cancer.
Methods: All mammograms described by us were performed in 2 generally accepted standardized projections: basic (oblique medio-lateral and straight cranio-caudal projections) and additional. 830 of patients, 777 (93.5%) underwent X-ray mammography for diagnostic purposes. 830 of patients, in 380 (48.9%) patients had malignant neoplasms, 200 (25.7%) - fibroadenomas, 16 (2.1%) - papillomas, 13 (1.7%) - lipomas, 37 (4.8%) - inflammatory process, 55 (7.1%) - cysts and 23 (3.0%) - galactoseles were diagnosed. The number of false-positive results was 14 (1.8%), and the number of false-negative results was 39 (5.0%). Thus, the sensitivity of the mammography method was 98%, specificity - 76%, precision - 83%. These results were close to the world average.
Results: An algorithm of treatment-diagnostic measures depending on the category of BIRADS in non-palpable tumors of the breast was developed and presented.
Conclusion: In the mammographic examination, result the false negative result according to ACR-1 was 0.3%.
Keywords: breast cancer, X-ray mammography, specificity, sensitivity, precision

HALOPHYTE PLANTS OF THE ABSHERON PENINSULA

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Halophytes the plants growing in places with a salt content of more than 0.5%. The adaptability of plants to a high concentration of salts in the medium is due to the high concentration of vacuolar juice, which, according to the suction force, is higher than the soil solution; the excess salt of some halophytes is released to the outside, where after drying it forms solid films or crystalline clusters.

Though the fact that only a small group of higher plants can grow in the saline habitats, Pallas was the first to call such plants "halophytes".

The study of flora is not limited to search for new species, but also to investigate the growth dynamics of plant species known for this territory, their life forms and attitudes to salinity and drought were also studied. The purpose of this work is to study the changes in the flora of Absheron based on published literature and newly collected herbarium specimens, to clarify the taxonomic composition and bioecological features of the flora that is recorded for the area.

In Azerbaijan, certain places in the Absheron peninsula and in many other deserted places, the soils are very salty because of presence of sodium chloride, sodium bicarbonate, calcium sulphatepotassium chloride, etc. In these dry and salty habitats generally succulent xerophytes, e.g., Cakile euxinia, Bassia scoparia, Chaenopodium album, Suaeda fructicosa, Salsola dendroides, Artemisia fragrans, Atriplex prostrate, Zostera noltii, grow very successfully and form microedaphic formations.

Thus, there are 87 species of Halophytes on the peninsula, most of which are concentrated in the family Chenopodiacaea. In addition, some species belong to other families: Asteraceae, Brassicaceae, Poaceae, Plantaginaceae, Tamaricaceae, Cyperaceae, Caryophyllaceae, Frankeniaceae, Gentianaceae, Zosteraceae etc.

Keywords:: Halophytes, peninsula, Absheron, species.

METHODS TO INCREASE THE EFFECTIVNESS OF TREATMENT OF THE INFLAMMATORY DISEASES OF PERIODONTIUM IN CHILDREN

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INTRODUCTION. Periodontal diseases occupy a special place among the main dental pathologies. The history of the study of the etiopathogenesis of these diseases is very ancient. Epidemiological studies show that the observation of periodontal diseases is increasing in the 21st century as well. According to the World Health Organization, these values are close to 80-92% .

The etiology and pathogenesis of periodontal diseases, their clinical course, pathological changes should be used under the supervision of clinical, paraclinical and laboratory studies.

The aim of the study was evaluation of the effectiveness of usage of the Loroben antiseptic solution, including a combination of effective components.

MATERIAL AND METHODS. The study involved 103 patients with a diagnosis of chronic catarrhal gingivitis (CCG) and mild form of chronic periodontitis (MFCP).

The patients were divided into 3 study groups:

Group I - without prescribing any therapeutic measures, professional hygiene of the oral cavity was carried out;

Group II - after professional hygiene of the oral cavity, a solution of chlorhexidine bigluconate was used;

Group III - after professional hygiene of the oral cavity, the Loroben solution was used.

RESEARCH RESULTS. Dynamic observation of changes in the oral cavity resulting from therapeutic and preventive measures showed that in patients with CCG and MFCP, after the 3rd day of using the Loroben solution, significant positive changes in the studied indices were observed.

The results of laboratory studies show that during implementation of therapeutic and preventive measures when using the Loroben solution, the recovery of the functional activity of local immune factors was more pronounced

CONCLUSION. Based on the results of clinical, immunological studies and objective tests, it can be concluded that the use of Loroben solution is effective in the treatment and prevention of periodontal diseases in children.

Key words: catarrhal gingivitis, chronic periodontitis, school children, Loroben

MODEL SYSTEMS OF GRADIENT AGAROPONICS AND PROSPECTS OF THEIR APPLICATION

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ABSTRACT

The culture of isolated plant cells and tissues is a unique system for studying physiological, biochemical, molecular-genetic processes and metabolic sequences occurring at the cellular level under normal conditions as well as under the influence of abiotic factors. The effectiveness of experiments and obtaining adequate responses to external influences depend on the correctly selected model system of cell culture cultivation. The model system should provide an adequate response, considering the multiplicity of stress factors during the proliferation of a complex population of cell masses, depending on the specific impact factor.

Model systems using gradient agaroponics respond to the methodological conditions to the greatest degree when it is necessary to alternate repeated actions of different intensities to receive an answer to this effect during one experiment on a developing population of cells. Gradient agaroponics allows studying adaptability not only at the cellular level but also determining the limits of resistance of root and vegetative parts of plants, their relationship and contribution to the overall resistance of the genotype.The research on the induction of morphogenesis and reconstruction of bread and durum wheat plants on a two-component agar medium has shown the advantages of gradient agaroponics.

Previous experiments showed significant variability in the genotypic dependence of the development of the root system on the auxin concentration. At the first stages of induced morphogenesis, all genotypes were relatively comparable in morphological potencies. However, during further cultivation, a constant hormone content in a medium caused inhibition and delay in some varieties. A decrease in the concentration of auxin in the lower agar layer favorably affected the development of the root system and its morphology, which allowed more successfully transferring plants to an artificial substrate for further cultivation.

Key words: model system, gradient, agaroponica, morphogenesis, in vitro.

PRES SYNDROME AS A COMPLICATION OF DRUG THERAPY IN A BOY WITH MEDULLOBLASTOMA. CLINICAL CASE.

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Objective. Description of a patient with PRES syndrome (posterior reversible encephalopathy syndrome), which developed during chemotherapy in children diagnosed with Medulloblastoma.

Methods. A 6 years old boy with diaqnos Klassik Medulloblastoma., after a surgery was treated in the National Oncology Center in Pediatric Chemotherapy Department. During the chemotherapy was noted a sudden development of headache, with a disturbance of consciousness manifested by drowsiness, alternating with psychomotor agitation. Single generalized seizures were observed, also a rise of blood pressure to 160/90 mm Hg. MRI confirmed by PRES sindrom with vasogenic cerebral edema. The patient was transferred to the intensive care unit, where he received antihypertensive, antiepileptic symptomatic and concomitant therapy. On the 10th day, the patient's condition completely improved, there was a positive dynamics of treatment.

Discussions. This clinical observation reflects the features of the course of a little-known type of encephalopathy, which requires multidisciplinary assessment and urgent treatment in an intensive care unit. In most cases, this syndrome manifests itself in a pentad of signs: headache, changes in consciousness and vision, epileptic paroxysms, increased blood pressure. The main diagnostic criterion is the presence of vasogenic cerebral edema , detected by radiological neuroimaging. First aid consists in identifying of pathological process and its adequate treatment. Great importance has the analysis of the side effects of the drugs the patient received, in order to cancel or reduce the dose . Symptomatic treatment consists of antihypertensive and antiepileptic therapy.

CREATION OF SOME PHARMACEUTICAL PRODUCTS ON THE BASIS OF LICORICE (Glycyrrhiza L.) AND IMPLEMENTATION IN THE NATIONAL INDUSTRIAL PARK "BIYAN".

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The rich medicinal flora, fauna and mineral natural resources of the Republic of Azerbaijan invent unlimited conditions for the creation of promising pharmaceutical products. The solution to the problem of the development and subsequent use in medical practice of medicines based on natural ingredients obtained from local resources in order to protect the health of the nation is of great social importance.

Azerbaijan has long been known as a country with significant reserves of naked licorice (Glycyrriza glabra L.), which made it possible to organize the Licorice Industrial Park in the republic, which creates a real industrial platform for the production of dosage forms containing licorice.

On May 15, 2012, the President of the Republic of Azerbaijan Ilham Aliyev signed Guideline No. 2/483 "On the rational use of the natural resources of Azerbaijan, including the richest plant flora and fauna in order to create pharmaceutical products and industries to satisfy the population with affordable high-quality, effective, safe medicinal means ".

As a guide to action in October 2012, the national LLC "Products Licorice" - "Biyan Products" was created, which is engaged in the development of pharmaceutical products based on licorice, the production of technical, food and pharmaceutical products of licorice and their sale. To this end, Biyan Products LLC purchased a land area of 1039 hectares in the Agdash region and created a plantation of naked licorice - Glycyrrhíza glábra L. on 1000 hectares, and also built on an area of 23 hectares the largest National Industrial Park "Licorice", including the Plant for the procurement, processing of licorice and the production of medicinal products on 11-12 hectares of land for the receipt of raw materials.

Currently, this Industrial Park "Licorice" is the most promising in Azerbaijan in terms of capacity for the production of phytopreparations.

Thus, the development of technologies for various pharmaceutical products and their dosage forms containing effective components of licorice naked for use in various fields of medicine and cosmetology, with subsequent marketing research of these products and implementation in national industrial production, is a timely, relevant and promising research direction.

Key words: licorice, pharmaceutical products, industrial platform.

NEOADJUVANT RADIOTHERAPY FOR PATIENTS WITH RECTAL CANCER USING IMRT

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Objective. With implementation of combined programs for the treatment of rectal cancer (RC), there is an increasing need to limit the negative side effects of each method as much as possible and searching for ways to increase their effectiveness. One of the possibilities is to use of intensity modulated radiation therapy (IMRT).
Material and methods. The results of treatment of 263 patients with RC with T2-3N1-2M0 stages after neoadjuvant RT were analyzed: in a single fraction doze (FD) -2.0-2.2 Gy 5 days a week to a total dose (TD) -60, 0 Gr. Ninety six patients underwent 3D-conformal RT, and 167 patients underwent IMRT on linear accelerators.
Results. The results of the combined treatment were assessed after surgery based on macro- and microscopic examination of the removed preparations. Almost all patients achieved some degree of radiation pathomorphosis: Three-four weeks after completion of neoadjuvant-IMRT, the number of patients with grade III-IV pathomorphosis (area of necrosis> 43.8%, the number of cells with irreversible forms of dystrophies> 52%) was 68.7 ± 4.2%, and after 3D-conformal RT - 46.9 ± 8.8%. Over 2 years in the IMRT group, relapses were noted in 16.3 ± 3.9%, with 3D- conformal RT, in 21.9 ± 7.3% of cases. At the same time, a decrease in negative reactions with IMRT was noted in comparison with 3D-conformal RT.
Results. Neoadjuvant IMRT attenuates negative reactions, increases the degree of radiation pathomorphosis in patients with RC, which has a positive effect on the duration of relapse-free survival. This improves the quality of life in patients and expands the possibilities of combining RT with other methods.

Keywords: IMRT, rectal cancer, pathomorphosis, relapse

FEATURES OF CULTIVATION OF THE SHIRVAN-SHAHI GRAPE VARIETY DURING MICROPROPAGATION

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ABSTRACT

One of the most common problems in clonal micropropagation of plants is a bacterial infection in the transplant. The prepared nutrient media have a direct effect on the in vitro cultivation of the plant as a favorable substrate for the development of bacterial and fungal microflora. The results of in vitro experiments proved the presence of internal pathogens in the aboriginal Shirvan-Shahi grape variety. To increase the efficiency of microclonal propagation of the Shirvan-Shahi grape variety, ways to eliminate the pathogenic microflora from the internal organs and tissues of the plant were developed by conducting experiments with various antibiotics.

The effect of antibiotics on the activity of bacterial infections and their effectiveness were determined during the cultivation of the Shirvan-Shahi grape variety in vitro and in vivo. Carbohydrates are also a favorable growth environment for pathogens. In addition to chemotherapy to control pathogens, optimization of carbohydrates in the nutrient medium is important. Carbohydrates are added as a source of carbon to maintain the osmotic pressure of the cells as well as to provide the carbon supply. Preserving the osmotic pressure of the nutrient medium affects the cell division rate and morphogenesis. As a source of carbon, sucrose can be toxic in high concentrations and can inhibit the growth and development of the crop. As the concentration of sucrose in the nutrient medium decreases, the percentage of pathogen infection also declines. Sucrose is one of the main factors that stimulate the rapid growth of the plant in vitro.

Therefore, a sharp decrease in the concentration of sucrose in the nutrient medium has a negative impact on the dynamics of development. To perform successful microclonal propagation, the most optimal variant is selected by regulating the dynamics of plant development with other components of the nutrient medium.

Keywords: Shirvan-Shahi, in vitro , sucrose, micropropagation

TOMOGRAPHIC ANALYSIS BY THE USE OF ELECTRICAL IMPULSES FOR EXAMINING THE STATE OF WELNESS THE CONDITIONS

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The Republic of Azerbaijan is opulent with an excessive number of tree species. Despite of the fact that these trees which are over a hundred years old, charm people with their outer stances, climate variations and change and also some ecological factors observed in the environment, triggers the process of decay in them. Nevertheless, the sequence of the processes within the plants and the damage levels can be ascertained via tomographic analysis by transmitting electrical impulses which aim to prevent decay processes that are developing within the certain plants. By identifying the core impacts and other environmental factors that cause deterioration within the plant throughout the years, we can eliminate the mainsprings that impede the growth of the plant by engendering malady in it. Eventually, this will help the trees to have a sturdy trunk as well as a longer lifespan.

Arbotom is a significant apparatus that has a crucial role to help us to ascertain a deterioration process and rottenness within the interior parts of a tree that are invisible to observe from an outer view. Via tomographic analysis by transmitting electrical impulses which aims to prevent decay processes that are developing within the certain plants, we can assuredly save in abundance of lives in the mother nature ere it is at the breaking point. Contemplating the pervasive impacts of the trees on human welfare and natural equipoise, it is our paramount duty to protect and take care of them and Arbotom prominently conduces toward the actualization of this sublime mission of ours.

accordingly their scales of endurance and fortitude against these cirsumstances as well as the subsequent level of damage have been analysed by the use of transmitting electrical impulses into the trunks of the certain trees. And it has been clearly appeared that via this beneficial methodic way, the plants can have not only a sturdy trunk, but also longevity.

Keywords: Arbotom, tension wave, tomography, stress wave

MODERN APPROACHES TO THE STUDY OF THE ALIEN PLANTS IN AZERBAIJAN

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Biological invasions are recognized as one of the leading drivers of global environmental changes and biodiversity loss, with detrimental effects on ecosystem services, economic sectors such as agriculture, and human wellbeing. Introduction of alien plant species into natural and semi-natural communities can lead to significant changes in ecosystems or their complete transformation. Currently, along with the widespread use of floristic and geobotanical approaches to the study of invasions, methods of mathematical modeling are also involved, which can show the probability of the degree of activity of invasive plants in the near future. An effective strategy for control of IAS also includes forming a variety of databases, and ecological and geographical modeling of niches, which allows the potential distribution of biological objects to be determined with high accuracy. Species distribution modeling (SDM), also known as ecological niche modeling, is currently the main tool for predicting potential distribution of IAS under climate change, using occurrence or abundance records and environmental conditions in global and regional areas. Last years alien plant species have spread from the lowlands to the higher mountain zones in the Greater Caucasus (Shaki-Zaqatala economic-geographical region) and Lankaran, where it forms stable groups in natural ecosystems. The key findings of the study were that suitable habitats for alien plant species will increase in future compared with the current period. These findings demonstrate that predictive modeling can be a significant resource in early detection of alien species and biodiversity conservation.

Keywords: invasive alien species, Azerbaijan, species distribution modelling, ecosystem.

THE BIRD FAUNA OF KARABAKH

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Abstract. There is a colorful nature and a rich bird fauna of Karabakh. From the ancient times, the birds have played an important role in the spiritual and material life of the people of Karabakh. Let's look at a few examples. Before the spread of Islam, the supporters of Zoroastrianism have used from the vultures eating carcasses in the religious and funeral ceremonies. The portraits of the youth hunting with the Peregrine Falcon around Shusha in the 18th and 19th centuries now are kept in the collection of G. Gagarin (artist), and described in the V. Vereshagin's (artist) book ("Le Tour du monde. 1869. Voyage in the provinces of Caucase") in the Georgian Art Museum.

Before the occupation, 288 bird species were registered in the Karabakh area. This means 30% of the bird fauna of Azerbaijan. 53 out of 72 species included to the Red Book of Azerbaijan were noted in the Karabakh area. The endemic Caucasian Black Grouse and Caspian Snowcock are inhabited in the Karabakh area. The International Important Significant Ornithological Areas of Importance (Aghgol, Sarisu, Bozgobu, the Barda tugai forests, Dalidagh, Gamishdagh, the Lachin reserve) are located in Karabakh. These areas are important habitats of the species belonging to the orders Pelecaniformes, Anseriformes, Falconiformes, Galliformes, Ciconiiformes, Gruiformes which have the status of the global and national protection. The mission of The Important Ornithological Areas is to protect the bird species included to the International Bern, Bonn, CITES, AEWA conventions and the integrity of the biodiversity there. It should be noted that before the occupation, 105 of 288 species were noted in the forest-shrub, 96 in the open dry, 87 in the coastal and water ecosystems. During 30 years occupation, Armenia influenced devastating to the environment and living nature. The savage attitude to nature, of course, caused caused the loss of bird habitats and a decrease in their numbers.

Result. The identifying and eliminating of the scale of the damage to the environment and wildlife intended in the measures plan of our state for the development of Karabakh. Of course, the implemented measures will allow the restoration of the natural ecosystems and the effective protection of the bird fauna in the occupied territories. Because the birds which are in the mountains, forests, lakes and plains of Karabakh have economic significance both scientific, aesthetic and as objects of the tourism.

Key words: Karabakh, ecosystem, bird, restoration

THE EFFECT OF REBOZO TECHNIQUE USED IN DELIVERY ON PERCEIVED BIRTH PAIN AND BIRTH SATISFACTION

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Objective: The study was carried out in a randomized controlled manner to evaluate the Effect of Rebozo Technique in Labor on Perceived Labor Pain, Birth Experience and Satisfaction.

Materials-Methods: The study was conducted with 72 primiparous pregnant women (Rebozo:37; Control:35) who were admitted to the delivery room. When dilatation reached 4cm in both groups, an introductory information form was applied and followed up. Rebozo Technique was applied to the pelvis for 5 minutes in the lying position to the women in the rebozo group in the latent phase of labor (4-5 cm). Before and after the application pain scores and fetal heart rate were recorded. Rebozo Technique was applied to the women in the rebozo group when cervical effacement 6-8 cm. It was applied first for the abdomen for 5 minutes and then for the pelvis for 5 minutes. Pain scores before and after the procedure and fetal heart rate were recorded. Pain scores of women in the control group were evaluated and followed up. In the postpartum 24-hour, Birth Experience Scale, Mackey Birth Satisfaction Rating Scale and postpartum evaluation form were applied to all women. Data were analyzed with SPSS 25.0 program.

Results: The groups were similar in terms of obstetric, socio-demographic, and anthropometric characteristics. After the application, the difference between the groups in terms of pain scores was found to be statistically significant ($p<0.001$). The difference between the mean scores of all sub-dimensions and total scales in women in the Rebozo group was found to be statistically advanced in both the Birth Experience Scale and the Mackey Birth Satisfaction Rating Scale in the control group ($p<0.001$).

Conclusion: The Rebozo Technique can be used in labor to reduce labor pain, provide a positive birth experience and increase birth satisfaction.

Keywords: Rebozo Technique, Labor Pain, Birth Experience, Birth Satisfaction

THE INFLUENCE OF BEHAVIORALFACTORSIN PATIENTS WITH DIABETES MELLITUS AND DEFINITION OF MENTAL STATUS.

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The aim of this work was to study behavioral risk factors in patients with diabetes and relationship with the response to chronic stress.

Materials and methods. In this research were examined 43 patients with a stable course of type in patients with II diabetes mellitus. All patients received constant doses of medications according to current recommendations. The average age of the patients is 61.25±7.6 years. Of these, 37 (86.1%) were women and 6 (13.9%) were men. Myocardial infarction had history of 16 (37.2%), high pressure was diagnosed in 42 (97.7%) patients. Surgical intervention was performed in 7 (16.3%) patients due to other diseases. The assessment of the level of stress was carried out using the questionnaire the Depression Anxiety Stress Scale –DASS-21.

Result. Level of stress was 20.9 points, depression 9.4 and anxiety 17.5 points. There was no significant difference between men and women.18.6% of patients regularly attended psychologists. Pearson`s correlation coefficient was: negative correlations between depression and anxiety with low physical activity (-2.7, $p<0.05$), quality of life (-0.4, $p<0.05$), interest in the environment (-1.15, $p<0.05$).The stress response can affect behavioral factors, anthropometric indicators and depression and anxiety levels. Mental health monitoring in patients with high levels of stress and anxiety is also help to the treatment in this group of patients.

Key words: psychology, patients, diabetes, stress.

THE INFLUENCE OF SALICYLIC ACID ON THE ABSORPTION OF OXYGEN IN THE WHEAT SPROUT ROOTS

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Abstract

Mutual impact of salicylic acid and 2,4-DNF as well as salicylic acid and ADP in the wheat sprout roots have been studied using polarographic method. It became known that in electronic-transportation cycle of respiration salicylic acid separates phosphorylation with oxydation.

Key words: salicylic acid, 2, 4-DNF, ADP, separator.

The respiration intensity in the wheat sprout roots under the influence of salicylic acid has been investigated. The investigations have been carried out by a polarographic method and the mutual impact of the classic separator 2.4-DNF and salicylic acid, ADP and salicylic acid has been studied.

It was ascertained that by adding 0.1mM 2.4-DNF to the system, the speed of the respiration increased a lot. After 30-40 minutes from the influence of 2.4-DNF, by adding 0.2mM salicylic acid to the system, the absorption of oxygen by the plant roots became decreased. The experiments were carried out by reverse sequences as well. First, the influence of salicylic acid and later on of 2.4-DNF on the respiration intensity in the wheat sprout roots was investigated. 0.2mM salicylic acid increased the absorption of oxygen in the sprout roots, whereas it became decreased by adding 2.4-DNF.

In the following experiments, the mutual influence of ADP and salicylic acid was investigated. It became obvious that the absorption of oxygen in the wheat sprout roots severely increased when adding 0.1mM ADP to the system. After 30-40 minutes from the influence of ADP, by adding 0.2mM salicylic acid to the system, the absorption of oxygen further increased in the wheat sprout roots. While adding salicylic acid first and later on ADP to the system, the results were similar to the ones carried out with 2.4-DNF. And in this case, 0.2mM salicylic acid also increased the absorption of oxygen in the wheat sprout roots and by adding 0.1mM ADP to the system later on, the absorption of oxygen became decreased. Thus, the non-acceptor effect of ADP became obvious. This effect is at the same time considered to be one of the criteria used for the determination of the separation of the oxidizing phosphorylation under the influence of salicylic acid. Thus, it was proved that 0.2mM salicylic acid was a separator during the carried out experiments.

It should be noted that high solidity of salicylic acid (1.0-2.0 mM) decreased the absorption of oxygen in the wheat sprout roots. So, it becomes obvious that salicylic acid has an effect as a separator with low solidity and as an inhibitor with high solidity on the absorption of oxygen in sprout roots.

ANALYSIS OF HEMATOLOGICAL PARAMETERS OF COVID-19 POSITIVE PATIENTS

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A retrospective analysis of routine hematological parameters was performed based on data set of 337 patients with a PCR-confirmed diagnosis of COVID-19, admitted to the Central Customs Hospital, Baku, Azerbaijan. Of these, 47.8% were men. The mean age of hospitalized persons was 51.6 years. In-hospital mortality rate among COVID-19 positive patients was 5.92%. A number of hematological parameters were studied at the time of hospital admission and during on-treatment period. Results were expressed as mean value and age- and sex-dependent prevalence of hematological alterations was calculated as well. The results of the study have shown a significant decrease of the absolute number of lymphocyte and eosinophil count in the blood of patients with a severe course of the disease and patients who had died of COVID-19. Noteworthy, there was not a single case of an increased number of eosinophils in patients with fatal outcome. Significant number of hospitalized patients had a decreased hemoglobin content.The high level of white blood cells and increased neutrophil count are also closely related to disease severity and risk of mortality. At whole, the results of the study indicate the prognostic value of routine hematological variables in control of disease progression and prediction of outcome.

Key words: COVID-19, white blood cells, neutrophils, eosinophils, risk stratification

INVESTIGATION OF LUMINESCENCE OF $Ca(Al_xGa_{1-x})_2S_4:Eu^{2+}$ SOLID SOLUTIONS

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ABSTRACT

Photoluminescence (PL) observed in solid solutions of $Ca(Al_xGa_{1-x})_2S_4:Eu^{2+}$ (x = 0.1–0.9) is studied. It is shown that the increase in emission intensity by 18% is caused by changes in the x values and electronic 5d → 4 f transitions in Eu^{2+} ions. The energy of the zero phonon line E_0, redshift D, and the Stokes shift ΔS are determined, The lifetime of Eu^{2+} ions.

Compound $Ca(Al_xGa_{1-x})_2S_4$ was synthesized by solid-phase reactions of the powder components of CaS, Al_2S_3, and Ga_2S_3, combined in stoichiometric ratios in graphitized quartz ampoules evacuated to 10^{-4} Torr by reaction. The product was activated with europium ions by introducing EuF_3 into the charge.

The spectra of photoluminescence and photoluminescence excitation of samples were measured under excitation radiation of a monochromatized xenon lamp at room temperature.

When excited the samples gives photoluminescence in the yellow–green region of the spectrum. With increasing concentration of aluminum in the solution, the emission maximum is shifted by 30 nm toward shorter wavelengths: from 558 nm for x = 0.1 to 528 nm at x = 0.9. Luminescence of the excitation spectrum spans from 270 to 526 nm. It should be noted that the photoluminescence observed in the test material is associated with electronic transitions 5d → 4f in Eu^{2+} ions. E_0, D and ΔS were found from the obtained spectra.With the temperature ranging from 10 to 300 K, a blue shift by 2 nm is observed in the photoluminescence spectra of solid solutions. A decrease in the maximum of photoluminescence intensity and an increase in the half-width of the spectrum are observed in the temperature range of 10–300 K. The efficiency of emission at temperatures of 20 and 300 K is almost independent of the excitation-power density of up to $2 \cdot 10^4$ W/cm^2.

Keywords: Photoluminescence; Red shift ; Stokes shift; Europium

IDENTIFICATION OF ADAPTIVE INDUSTRIAL CROPS IN KARABAKH EXPERIMENTAL STATION

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Cotton is one of the priority industrial crops grown in Azerbaijan for a long time. The demand for productive, high-quality fiber, disease-resistant and pest-resistant varieties of cotton is growing every year. The diversity of the original breeding material for inclusion in breeding programs is the main basis for the creation of new varieties. More than 1504 valuable forms and varieties of 5 types of cotton are conserved in the National Genbank of Azerbaijan. As a result of selection programs conducted at the Institute over the past 10 years, 7 new cotton varieties with valuable economic traits were created.

Karabakh Experimental Station of the Institute of Genetic Resources located in Tartar had rich in situ wheat, cotton, fruit plant collection. During occupation all infrastructure of Experimental Station was destroyed and some valuable accessions were lost. Shortly after the liberation of our lands from occupation, the Institute of Genetic Resources of ANAS organized a field seminar in the area where the Karabakh Research Base is located.

In order to restore agriculture in Karabakh in the future, it is planned to plant wheat, cereals and industrial plants wil be planted in the territory of Karabakh Experimental Station.

For this purpose, seeds of 120 samples of cotton from the National Genbank collection, Aghdash-3, Aghdash-3 improved, Bayragdar, Zafar, Garabagh-11, Alakbari and other local as well as introduced cotton varieties were prepared.

During the study of varieties data about soil and climatic conditions of region will be collected. Recommendations will be made by identifying the soil and climatic characteristics of the region that has not been studied about 30 years. High-yielding cotton varieties suitable for crop rotation will be identified and selection program will be implemented to create new cotton varieties suitable for the climatic conditions of the Karabakh region.

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Key words: cotton, industrial crops, adaptation tests, diversity

URBAN SOILS AND SOIL POLLUTION BY THE EXAMPLE OF BAKU

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This paper analyses soil samples from twelve districts of Baku city. We took 30 soil samples from the core of the agglomeration, such as parks, squares and roadside zones. Soil samples were collected from different ground layers depending on soil density. In recent decades, as a result of ongoing reconstruction works in the parks, the natural soil cover remains under the soils transported from the regions of Azerbaijan. Soil samples were taken from parks located in various parts of the city, and we can see a tangible difference in their properties.

The results of the analyzes show that gray-brown soil types are quite poor in terms of humus in some "untouched" areas. It`s content does not exceed 2%, ranging from 1.28 to 1.95% along highways. With increasing depth, there is a gradual decrease in humus up to 0.83%. The best result in terms of the area of green zones per person was achieved in Sabail district, the lowest result is in Nasimi district. Although in each case the green zones are 2.1-26.3 times less than the sanitary standard. The content of total nitrogen in these soils coincides with the content of organic materials in soils. The content of carbonates ($CaCO_3$) in mixed gray-brown soils in parks and in the roadside zones of Baku city varies from 7.74% to 17.94%. Their lowest content is found in the uppermost layer (0-20 cm).

This is probably due to deflationary processes, since the upper layer is loose and suspended. The composition of exchange bases is dominated by Ca^{++}, the value of which within 0-25 cm (Botanical Garden) is 57% -60% of the sum of exchange bases. The content of Mg^{++}in the upper layer of ground is also quite high, 36.6% - 36.25%. The indicators of Na^{++} reveal the degree of solonetziness. The pH value indicates an alkaline reaction varies from 7.8 to 8.2 depending on the depth of layers. And so it can be concluded that a change in the alkaline-acid regime of soils leads to physiological disturbances and death of plants. The soils become less acidic, while the alkalinity of the soils increases from the periphery to the center.

The analysis of soil samples for determination of heavy metals was also carried out. Comparative analysis of elements such as Cd, Zn, Sn, Cu, Ni, Cr, Pb, As, Co, was determined by an atomic adsorption spectrophotometer. It is known that the soil is imported in most of Baku's parks. However, given the comparative nature of the work, soil samples were taken from green areas, where the soil had not been affected for many years, and from roadside areas under constant pressure. When analyzing the experimental results, it was found that the Clarke index of heavy metals at a depth of 0-20 cm is within the normal range, but at a depth of 20-50 cm it exceeds the norm in most parks.

Keywords: urban soils, green areas of the cities, heavy metal pollution, urbanization.

PREVENTIVE IMMUNOMODULATORY THERAPY OF DACRYOCYSTITIS OF NEWBORNS.

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To date , there is a lot of evidence that symbiotics affect the human immune system.

The purpose of the study: To study the effect of a microbiological preparation containing Escherichia Coli and Enterococcus faecalis on the immune composition of lacrimal fluid.

Materials and methods: Immunograms were examined in children under the age of 15 months. 74 children were examined, divided into two groups depending on age, gender and diagnosis.All patients underwent a general clinical laboratory examination.

Results and discussions: In a group of healthy children after taking a drug containing probiotics, there were no changes in the composition of tears according to the studied indicators. The differences in the results of this group were minimal. The content of IL-1b in the tear of the second group after treatment decreased to 14.72±3.99 pkq/ml, which indicates a decrease in the level of proinflammatory cytokines in the lacrimal fluid in children. The amount of IL-10 in the tear of healthy children was 5.18±1.24 pkq/ml. In infants with DN, a month after the treatment, there was a decrease in the level of IL-10 and was 0.69 ± 0.11 pkq/ml.There were no differences in these indicators depending on the sex of the child in our studies.

Conclusions: In patients with DN, the content of IL-1ß in the LV is higher than normal values, and Il-10 is lower than the age norm. The use of probiotics makes it possible to stabilize the content of Il-1ß in the tear of patients with DN. These drugs do not affect the composition of the tears of healthy children. Therefore, the use of probiotics can be recommended in the complex treatment of DN.

Keywords: interleukin -1B;10, symbiotic,infants.

EVALUATION OF MEDICINAL AND NUTRITIONAL IMPORTANCE OF THE TROPICAL MARACUA FRUITS

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Tropical fruits are one of the most important products in the world. The Passifloraceae family includes up to 525 species belonging to the genus Passiflora. Among these species, it has only 50-60 edible fruits. Only a few have commercial value. The most common of these is Passiflora Edulis' dark purple (Passiflora Edulis. Sims.) Marakuya fruit. Recently, because the fruits are rich in vitamins, have anticancer, antioxidant and sedative effects, the growing demand for this species in our country has led us researchers to study this species thoroughly. P. edulis L. is a perennial woody plant with an ivy-liana-like body, which used as an ornamental plant in landscape architecture due to the decorative appearance of its fruits and flowers. The tea made of fruits to lower high blood pressure and infusion of flowers and leaves, having sedative, diuretic and hypnotic qualities used for centuries as a protection against bronchitis, asthma and cancer.

Marakuya fruits are of great importance in the food industry due to their physicochemical, pharmacotherapeutic, therapeutic properties, high productivity and getting high mass in the world market. Mass cultivation of Maracua fruit has been in the forefront in Brazil since the early 1970s. At the same time, in the 1950s, the country was producing fruit juice in Morocco.

Marakuya fruits are round or oval, dark purple or brown. It contains a large number of black seeds. The fruits weigh between 50-90 grams.

The fruits remain green for a long time, just a few (10-15 days) before ripening, turn into a dark purple-brown color with a few rapid color changes and fall to the ground when fully ripe. According to the literature, the fruits collected after falling to the ground. After falling to the ground, the fruits lose their moisture, shrink, and diminish in size. However, the aqueous mass inside does not lose its quality. Marakuya juice is a unique source of ascorbic acid (vitamin C) and carotenoids (vitamin A). The yellow gelatinous mass inside the fruit eaten together with the seeds.

Keywords: Therophytes, tropical fruits, ascorbic acid, pollination

ASSESSMENT OF THE FUNCTIONAL STATE OF THE KIDNEY AND VASCULAR ENDOTELIUM IN CHRONIC KIDNEY DISEASES

BÖYRƏKLƏRİN XRONİK XƏSTƏLİYİ ZAMANI XƏSTƏLƏRDƏ BÖYRƏKLƏRİN VƏ DAMAR ENDOTELİNİN FUNKSİONAL VƏZİYYƏTİNİN QİYMƏTLƏNDİRİLMƏSİ

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XÜLASƏ

Açar sözlər: böyrəklərin xronik xəstəliyi, endotelial disfunksiya

Böyrəklərin xronik xəstəliyi (BXX) birincili diaqnozdan asılı olmayaraq, böyrəklərin üç aydan çox müddətdə zədələnməsini özündə cəmləşdirən nozoloji anlayışdır. BXX-nin 1-4-cü mərhələsi olan xəstələrdə terminal mərhələyə çatana qədər ölüm təhlükəsi yüksəkdir. Endotelial disfunksiya (ED) BXX-nin inkişafında universal patogenetik həlqə hesab edilir. Bir çox müəlliflərə görə, ED-ni aterosklerozun inkişafında birinci mərhələ hesab edirlər.

Tədqiqata BXX-nin əmələ gəlməsinə səbəb Xronik qlomerulonefrit (XQ) və Diabet nefropatiyası (DN) olan 120 xəstə daxil edilmişdir. BXX-nin mərhələsi KDOGI (2002) təsnifatına görə qoyulmuşdur. Endotelin funksional qabiliyyətini öyrənmək məqsədi ilə En-1, VEGF, NO, CRZ-nin də konsentrasiyası təyin edilmişdir. USM vasitəsilə bazu arteriyasında EAVD və EAOVD qiymətləndirilmişdir.

Aparılan korrelyasiya analiz zaman YFS ilə qanda En-1-in konsentrasiyası arasında əks asılılıq müəyyən edilmişdir.Bu korrelyasiya əlaqəsi 1A yarımqrupunda r=-0,47 (p>0,05), 2A yarımqrupunda r=-0,527 (p<0,05), 3A yarımqrupunda r=-0,667 (p<0,01), 4A yarımqrupunda r=-0,696 (p<0,01) şəklində olmuşdur. DN zamanı da YFS ilə En-1-in konsentrasiyası arasında əks korrelyasiya əlaqəsi aşkarlanmışdır., 2B yarımqrupunda r=-0,611 (p<0,05), 3B yarımqrupunda r=-0,683 (p<0,01), 4B yarımqrupunda r=-0,735 (p<0,01) olmuşdur. Qanda endotelin digər biomarkeri -VEGF 1A yarımqrupunda zəif əks korrelyasiya əlaqəsi r= -0,306 (p>0,05), 2A yarımqrupunda mötədil əlaqə r=-0,417 (p>0,05), 1B yarımqrupunda r=-0,531, (p<0,01), 3-cü və 4-cü qrupun hər 2 yarımqrupunda YFS və VEGF arasında dürüst əks korrelyasiya asılılığı qeyd edilmişdir. YFS ilə NO arasında isə bilavasitə düz korrelyasiya asılılığı aşkarlanmışdır. CRZ ilə YFS arasında bünün qruplarda əks asılılıq aşkarlanmışdır. Böyrəklərin funksional vəziyyətini əks etdirən YFS ilə EAVD dərəcəsi arasında dürüst müsbət korrelyasiya əlaqəsi 3A və 4A yarımqruplarında (müvafiq olaraq,

r=0,634, p<0,01 və r=0,742, p<0,01) qeyd edilmişdir. DN zamanı artıq BXX-nin 1-ci mərhələsindən etibarən mötədil əlaqə yaranmış, 2-4-cü mərhələlərdə isə statistik əhəmiyyətli əlaqə müşahidə edilmişdir.

Beləliklə, endotelin funksional vəziyyətinin nəzərəçarpacaq dəyişməsi 3 və 4-cü qruplarda qeyd edilmişdir. Burdan belə nəticəyə gəlmək olar ki, endotelin funksional vəziyyəti YFS-dən asılıdır. Endotelin funksiyasının biokimyəvi göstəricilərə əsasən kompleks qiymətləndirilməsi zamanı, XQ ilə müqayisədə DN zamanı daha çox dəyişikliklər qeyd edilmişdir.

RESUME

Chronic kidney disease (CKD) is a term that includes kidney damage for more than three months, regardless of the initial diagnosis. Patients with stage 1-4 CKD have a higher risk of mortality before reaching the terminal stage. Endothelial dysfunction (ED) is considered a universal pathogenetic link in the development of CKD. According to many authors, ED is considered the first stage in the development of atherosclerosis.

The study included 120 patients with Chronic glomerulonephritis (ChGN) and Diabetic nephropathy (DN) caused by CKD. The CKD stage is set according to the KDOGI classification (2002). Concentrations of En-1, VEGF, NO, CRP were also determined to study the functional state of the endothelium. Endothelial-dependent vasodilation (EDV) and eendothelial-independent vasodilation (EIV) in the brachial artery were assessed using USG.

Correlation analysis shows a negative relationship between GFR and the concentration of En-1. There is r = -0.667 (p <0.01) in subgroup 3A, and r = -0.696 (p <0.01) in subgroup 4A. In the DN group, a negative correlation was found between the concentration of GFR and En-1. There is -0.735 (p <0.01). Another biomarker VEGF in the subgroup 1A has a weak negative correlation r = -0.306 (p> 0.05), in the subgroup 2A a moderate correlation r = -0.417 (p> 0.05), in the subgroup 1B r = -0.531, (p < 0,01), a negative correlation between GFR and VEGF was noted in each of the 2 subgroups of in 3 and 4 stages of CKD. A direct positive correlation between GFR and NO was found. A negative correlation was found between CRP and GFR in these groups. A true positive correlation between the degree of GFR and EDV reflecting the functional status of the kidneys was observed in subgroups 3A and 4A (r = 0.634, p <0.01 and r = 0.742, p <0.01, respectively). Results of DN patients show a moderate relationship from the 1st stage of the CKD, and a statistically significant relationship was observed in the 2nd-4th stages.

Thus, significant changes in the functional state of the endothelium were noted in groups 3 and 4. It can be concluded that the functional state of the endothelium depends on the GFR. During a comprehensive assessment of endothelial function based on biochemical parameters, more changes were noted in patients with DN compared to with GN.

LANDS OF EASTERN ZANGAZUR ECONOMIC REGION AND DIGITAL LAND MAP GENERATION (GIS BASED)

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"On July 7, 2021, President Ilham Aliyev signed a decree on the new division of economic regions in the Republic of Azerbaijan. The decree says that large-scale measures are being taken to restore the liberated territories, ensure their future development, create the necessary infrastructure and return the population to their native lands. The expediency of carrying out all work on the basis of a single program to ensure their equal development through the effective use of the rich economic potential, natural resources and extensive tourism opportunities of these territories requires a reconsideration of the division of the liberated territories into economic regions.

Zangazur district, surrounded by the Zangazur mountain range and occupying a large area from Lachin and Kalbajar to Nakhchivan, in the eastern part of the Zangazur plateau, on the border with Armenia, in the same geographical area, historically together for many years was established in 1861, and historical and cultural ties make it necessary to unite Zangilan, Gubadli, Jabrayil, Lachin and Kalbajar regions in a single Eastern Zangazur economic region. Eastern Zangazur Economic Region covers an area of 7,448 km2, including 5 administrative districts. The land cover in this area is mainly formed by eroded eluvial-deluvial sediments of volcanic rocks. The complexity of the relief of the region has had an impact on soil formation. According to the economic raton, the maximum altitude is about 3682 m above sea level, and the minimum is 160 m, which led to the diversity of soil types and subtypes.

31 semi-type lands on 8 doninant types in Eastern Zangazur economic region - mountain meadows; grassy mountain meadow steppe; mountain coniferous forest; mountain forest; mountain black, mountain brown forest; mountain brown; mountain gray brown; distributed as an alluvial meadow (based on the analysis of the fund, archives and research). These lands are mostly used as summer pastures and pastures in Lachin and Kalbajar, and in Zangilan, Gubadli and Gabrayil under arable and perennial crops.

Decrees of the President of the Republic of Azerbaijan and other adopted State Programs on improving governance and accelerating institutional reforms in the agricultural sector highlight new approaches to the application of modern technologies. From this point of view, conducting fundamental scientific research on lands in the liberated territories will contribute to the forthcoming land reforms, the creation of a single database on all lands and the protection of biodiversity. Compilation of maps of the lands of the Eastern Zangazur economic region in the GIS environment is of great importance in terms of land development. Compilation of land maps in software related to geographic information systems is mainly performed in the following sequence: 1) Carrying out vectorization works; 2) Collection of atrial-buty (various information on layers) database of vectorized layers; 3) Inclusion of atri-butiv information on layers in the database and creation of an interactive map; 4) Obtaining the required information from the database in an interactive mode; 5) Implementation of land map design works; 6) 3D image based on digital height model.

One of the important issues in the development of interactive digital maps of lands is the creation of a database. Thus, at the final stage, interactive digital soil maps based on GIS were developed, taking into account soil factors.

Keywords: Eastern Zangazur, Geographic information systems, land, map.

LONG-TERM RESULTS OF VARIOUS VOLUMES OF SURGICAL INTERVENTIONS IN PATIENTS WITH NODULAR AND MULTINODULAR EUTHYROID GOITERS

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Goal: The choice of optimal volume of surgical intervention on this pathology based on the study of long-term results in patients who operated for nodular and multinodular euthyroid goiter.

Material and methods. 70 patients had been operated (19 for nodular and 51 for multinodular goiter) at the age of 16-74 years. The female was 66, men - 4. The prescription of the operation ranged from 6 months to 16 years. 25 patients underwent hemithyroidectomy, 20 - subtotal thyroidectomy- to near total thyroidectomy, 25 - total thyroidectomy. In postoperative monitoring were performed ultrasound examination of the thyroid residue, determination of TSH, free T4, ionized Ca and vitamin D levels.

Results. 22 persons were suffered noncompensated hypothyroidism due to the lack of admission of hormone therapy or of an inadequate dose of the drug. Most of patients who had hemitireoidectomy did not take levothyroxin, only 8% of them took it in a minimum dose (25 or 50). Level of levothyroxin, in persons who have total thyroidectomy was an average of 3 times higher than in patients undergoing organ-preserving operations. The relapse of the disease in the form of a diffuse increase in thyroid residue it was observed in 4 patients who have undergone subtotal resection of both fractions and in one patient who had a hemithyroidectomy.

Conclusion. After organ-preserving operations no need or need little dose of compensatory hormone therapy. Poor health of patients in the postoperative period is associated with inadequate hormone therapy and with a lack of vitamin D and calcium.

Keywords: nodular, multinodular goiter, surgical treatment, relapse, hypothyiroidism

STUDY OF PISTACHIO (PISTACIA VERA L.) IN ABSHERON CONDITIONS

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Currently, the Genetic Resources Institute of the National Academy of Sciences of Azerbaijan conducts researches into identification, collection, study, selection, reproduction and conservation of the most valuable local varieties and forms.

As a result of the research, it was found that pistachio is a crop with high polymorphism. That could be explained by the high heterozygosity caused by the free pollination of each female tree by many pollinators and seed multiplication.

Pistachio forms are notable for their biological parameters, morphological features, commercial quality and taste of nuts, as well as diseases and pests resistance.

Pistachio is a gonochoristic crop and the asynchronous flowering of heterosexual trees predetermines the need for the selection of pollinators by the flowering phase of female forms. Over the years of research, all male forms bloomed well, producing large amounts of pollen.

As a result of many years of research, we have identified local agriculturally important forms of pistachio: No. 26, No. 27, No. 45, No. 53, No. 59, No. 62, No. 3/1, No. 3/9 and No. 5/5, differing in size of nuts 23, 5 ± 0.3173x14.3x0.1497x13.4 ± 0.1377, 19.2 ± 0.1197x13.0x0.1197x11.3 ± 0.1197.

The weight of the selected nut forms ranges between 1.1 and 1.7 g, the kernels output varies between 43.0 and 57.4%, the suture opening varies between 74 and 100%.

The main component of the chemical composition of pistachio is oil. We found that its content varies depending on the variety and form in the range of 56.5-62.5%. All forms of pistachio have an excellent taste inherent in Azerbaijani pistachio.

The selected pistachio forms are diseases and pests resistant.

The pistachio gene pool of this institute is of great interest for further research and implementation in the horticulture of the republic.

KEYWORDS: pistachio, gene pool, selection

INFLUENCE OF A COMPLEX PLANT ANTITOXICANT ON HEMATOLOGICAL INDICATORS AT POISONING WITH HEAVY METAL SALTS

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Reducing the risk of heavy metal intoxication for prevent the development of serious diseases is one of the urgent problems of medicine today. We studied the effect of a complex antitoxicant prepared from the flora of Azerbaijan on hematological parameters under chronic exposure to heavy metal salts in an experiment.

The research was carried out on 65 white outbred male rats weighing 200-250 g. The animals were chronically exposed to heavy metal salts through drinking water for 60 days (cadmium sulfate -1 mg / kg, nickel nitrate -2 mg / kg, cobalt nitrate - 2 mg / kg).Animals began to receive a complex antitoxicant (industrial wastes of herbs: licorice root and rhizome, hips, bones of grapes, oat bran, burdock roots at a ratio 3: 2: 1 1: 2 - Eurasian patent 201600043 June 25, 2018) a month after exposure at a dose of 10 mg / kg. The study of hematological parameters was carried out on an automatic hematological analyzer RT-7600 (Germany) in 30 and 60 days after exposure.

The results of the study showed certain patterns: on the 30th day the number of leukocytes, lymphocytes, platelets and erythrocytes increased, but the level of hemoglobin and hematocrit remained unchanged, and the number of granulocytes decreased in compare with the initial data. By the 60th day of the study, the number of almost all indicators was reduced and dramatic changes were noted under the influence of cadmium, then nickel and cobalt. On the 60th day in animals receiving the antitoxicant, a sharp decrease in the number of blood corpuscles was largely prevented. The obtained data indicate the detoxifying effect of this plant complex and the possibility of testing it in the clinic of chronic heavy metal poisoning for both therapeutic and prophylactic purposes.

Keywords: heavy metals, blood, antitoxicant

THE INFLUENCE OF HEAVY METALS SALTS MIXTURE ON BEHAVIORAL REACTIONS IN EXPERIMENTAL ATHEROSCLEROSIS

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The risk of intoxication with heavy metals and its impact on people's health in the liberated territories of Azerbaijan after the second Karabakh war is a problem requires attention today.
In the present study we studied the neurotoxic effects of chronic exposure heavy metal salts in a model of atherosclerosis. The experiments were perfirmed on 40 white outbred male rats weighing 180-250 g. The atherosclerosis modeled according to I.V.Savitsky (2016), based on the polyetiological theory of the development of the disease. After 2 weeks were determined total cholesterol, LDL and HDL in blood serum to confirm atherosclerotic changes.
The animals were exposed to the mixture of cadmium sulfate (1 mg / kg), nickel nitrate and cobalt nitrate (2 mg / kg each) through drinking water during 60 days after modeling. Animals in the control group received regular drinking water. A study of neurotoxicity were performed according to the SOUK- test in 15, 30 and 60 days after the start exposure.
The results of the study showed that in all periods of the study had observed damaging effect on the brain of experimental animals, expressed in impaired behavioral reactions. Already after two weeks were noted an increase anxiety and poor coordination of movements. After a month there was a significant decrease in horizontal motor activity, a further decrease in the number of stops with an increase in the duration of the stop time, a decrease in vertical stands, looking down, grooming, urination and defecation. The noted disturbances in emotional, motor and exploratory activity were observed even more two months later. The animals also lost weight and consumed very little water.

Keywords: heavy metals, atherosclerosis, behavioral reactions

NEW BUFFER LAYER FOR CISe THIN FILM SOLAR CELLS

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Abstract

Copper-indium di-selenium, $CuInSe_2$(CISe), is the most promising absorbent material for thin-film solar cells. CISe-based solar cells have shown long-term stability and the highest conversion efficiency of all thin-film solar cells. In addition, CISe-based solar cells are very stable and therefore have a long operational life. The deposition process generally has a significant impact on the properties of the resulting film as well as on production costs. CISe can be prepared by a variety of methods such as physical and chemical methods.
The objective of this work is to study the various obstacles limiting the performance of solar cells based on thin layers of $CuInSe_2$ (CIS) . This choice was dictated by the need to manufacture $CuInSe_2$ thin layers with low costs, easy to implement, with the possibility of depositing large surfaces and it requires neither vacuum nor high temperature with properties meeting photovoltaic.
The structural, optical and electrical properties of different thin layers are studied and compared with the photovoltaic performance of the cells produced.

Keywords: Solar cell, Photovoltaic, $CuInSe_2$, buffer layer.

METHODS FOR ADAPTABILITY AND STABILITY ANALYSIS IN DURUM WHEAT CULTIVARS

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ABSTRACT

Portugal is located in an area of Europe where climate change is already being felt in the present and, according to different studies, will tend to worsen in the future. In recent years, the occurrence of extreme climatic factors has intensified (high temperatures with accentuated water constraints) which, among other physiological events, accelerate the development cycle of plants, having a negative impact on production and, often, on quality. Understanding the behavior of varieties in extreme weather situations and finding new varieties with tolerance to water and thermal stresses, which, with appropriate technical itineraries, help to reduce the yield gap (difference between potential and actual production) in the main cereal producing areas, are some of the main objectives of this study. This study aimed to evaluate the adaptability and stability for grain production of 11 wheat cultivars (Triticum aestivum L.) in Portugal, using four methods. The experiments were carried out between 2016 and 2019, in different places in Portugal, with a randomized block design, with four replications. Wricke's (1965) methodology indicates stable cultivars, regardless of average yield. Equally efficient in evaluating stability and indicating stable cultivars and also adapted to favorable and unfavorable environments were the methodologies of Finlay & Wilkinson (1963), Eberhart and Russell (1966) and Cruz et al. (1989). The methodology of Lin and Binns (1988), easy to interpret, was efficient in recommending cultivars with high yield and good stability, and the most responsive materials, the lowest Pi and the high negative spearman correlation, between grain yield. It was concluded that the Lin and Binns methodology is quite discriminating and, when associated with Wi, it offers greater security in recommending cultivars with greater stability.

Keywords: Adaptability and stability, Genotype–environment interaction, Grain yield.

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RENAL STUDY OF THE EFFECT OF FENUGREEK IN RATS

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Abstract

Subject Description: Fenugreek (Trigonella foenum-graecum L.) is an annual plant that belongs to the Leguminous family (Kassem A et al., 2006). This shrub can reach a height of 130 cm and its trifoliate, wing-shaped leaves measure 1 to 4 cm. Its Latin name (Trigonella "small triangle") refers to the shape of its flowers. Light yellow or whitish in color, they can grow in pairs or solitary **(Serra B et al., 2001) (Petropoulos G et al., 2003).**

Objectives: The objective of this work is to strengthen the scientific data on the interest of using the aqueous extract of fenugreek seeds in the medical field.

Methods: 14 male rats were used in this study, divided into tow groups including a group treated with aqueous extract of fenugreek (F) and a group treated with mineral water by the oral gavage method for 30 days orally.

Results: Our results show a decrease in urea and creatinine levels, in addition the histological study does not show any tissue alteration of the kidneys in rats treated with fenugreek

Conclusion: The results found show that the aqueous extract of fenugreek seeds improves biochemical parameters and no signs of kidney tissue toxicity in wistar rats.

Keywords: Fenugreek; Wistar rats; urea; kidney tissue.

LAB-ON-A-CHIP AND INTERNET OF THINGS TECHNOLOGIES AGAINST COVID-19 CHALLENGES

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Abstract
An urgent need is required for rapid, sensitive and precise detection of viral disease after the last outbreaks. In this context, microfluidics or lab-on-a-chip (LOC)systems which encompass a broad range of detection devices have shown promise. The conventional diagnostic methods include enzyme-linked immunosorbent assay (ELISA), immunofluorescence and reverse transcription polymerase chain reaction (RT-PCR). However, they have limitations such as low sensitivity, low specificity, and a need for bulky equipment. LOCs have successfully overcome some of these restrictions in different diseases diagnosis including viral infections. Fabrication of LOC systems as devices that act either individually or detect the virus in samples with the sample to answer method are other appealing advantages. Internet of things (IoT) framework has gained increasing momentum in the recent years. Different studies have been conducted in order to build models, develop robust concepts, and design societal implementations for increasing the life quality of general population. Regarding the COVID-19 pandemy, scientists did not have enough time to generate an optimal solution; instead they reacted to the problem and commenced working on the solution. This is maybe the most immediate and pressing need for researchers to find solutions in our history. There are certain challenges in sensor technology such as simple application, reliability, sensitivity, accuracy. Increased device life time, and being cost-effective. Recent advances in sensor technology, wireless communication, and IoT systems, has pointed towards the usefulness of these systems in alleviating the COVID-19 challenges. Therefore, the development of the healthcare area has various generations listed with abundant advances which stand as the boon in this era.

Keywords: Microfluidic, Viral detection, Immunoassays, Nucleic acid, Health care, COVID-19, Internet of things, Health care

METHANOLIC EXTRACT OF SATUREJA KITAIBELLI AS INHIBITOR ON SEED GERMINATION

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The use of natural products against pests on agricultural crops is a distinctive feature of organic farming. Essential oils are imposed as a good alternative to synthetic herbicides, among them Satureja hortensis oil is the most promising. However a serious disadvantage of the essential oil is their high volatility. This is the reason the studies to orientate toward different extracts from species whose essential oils have shown a high phytotoxic effect. Initial step in determining the potential of any product as a herbicide is to determine its inhibitory activity on seed germination and plant growth. In the present study methanol extract of Balkan endemic species Satureja kitaibelii Wierzb. ex Heuff was studied as inhibitor on germination of Lolium perrene seeds. The experiment was conducted in Petri dishes. Aqueous solutions of the methanolic extracts at concentrations 0.5, 1, 2 mg/mL were studied. Inhibition of seed germination by 14% 38% 89% was established by applying methanol extract at 0.5, 1, 2 mg / ml concentration, respectively.. The rood growth was inhibited with 63% with the highest studied concentration of methanolic extract. The results received show that methanolic extract of Satureja kitaibelii possess a high inhibitory activity on seed germination that determines it as promising source of herbicide activity.

Keywords: herbicide, endemic, Lolium perrene, organic farming

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EXPERIMENTAL EFFECT OF STACKING SEQUENCES AND SUPPORT SPAN ON DELAMINATION DAMAGE OF GRAPHITE/EPOXY WOVEN LAMINATE UNDER A THREE-POINT BENDING TEST

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Abstract

In this work, we present an experimental study of carbon/epoxy woven laminates behavior under a three point bending test by varying the support span and stacking sequences. Two support span values are studied, and the results found indicate that the specimens with a large support span show a nonlinear behavior and those with a small support span present a linear behavior. Two stacking sequences are used ($[45/0]_{2s}$ & $[90/0]_6$) to examine the effect of the ply orientation in the failure modes. The digital microscope is used to identify the succession of the failure and the failure mode, the microscopic observation shows the initiation of delamination but without any propagation for the $[90/0]_6$ orientation.

Keywords: Failure delamination, Three-point bending test, carbon/epoxy woven laminate

POTENTIAL OF FUNGAL BIOCOMPOSITES IN THERMAL INSULATION APPLICATIONS: A REVIEW

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Abstract

Nowadays, there has been a rapidly growing interest in providing cheap and sustainable materials, especially for construction applications. When it comes to thermal insulation, fungi-based biocomposites turn out to be a promising solution to fulfill growing needs for economical, ecological and environmental materials. Their properties can be modified based on their composition and manufacturing process. In addition, mycelium biocomposites can be grown on a substrate made of low cost waste products, such as cellulose fibres, reeds or hay. Two of the fungal species, Ganoderma Lucidum and Pleurotus Ostreatus, found the widest range of applications, due to their stable growth processes and mycelium density. Fungal materials are also biodegradable and, once utilized, can be applied to produce more mycelium biocomposites. The downsides, however, are high density compared to currently used polystyrene foams, and high water uptake. The topic of this review is to summarize latest achievements and progresses made in the field of engineered mycelium composite research. As more and more commercialized fungi-based biocomposites are produced, demand for research on improving the manufacturing practices grows. The ability to modify the end products' properties by adjusting the growth environment creates a way for these materials to be used in set of applications.

Keywords: Fungal mycelium, biocomposites, insulation properties

WEARABLE TECHNOLOGIES FOR THE ELDERLY

YAŞLILAR İÇİN GİYİLEBİLİR TEKNOLOJİLER

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ÖZET
Tüm dünyada nüfus yaşlanan topluma doğru değişim göstermektedir. Ülkemizde Türkiye İstatistik Kurumu (TÜİK) 2020 verilerine göre yaşlı nüfus olarak kabul edilen 65 ve daha yukarı yaştaki nüfus, 2015 yılında 6 milyon 495 bin 239 kişi iken, 2020 yılında 7 milyon 953 bin 555 kişi olmuştur. Kısacası yaşlı nüfus oranı son beş yılda % 22,5 artış göstermiştir. Bu değişimi oluşturan yaşlı nüfus arttıkça, bu nüfusun bağımsız yaşaması ve bakım taleplerinin karşılanması için yeni çözümlere olan ihtiyaçlar da artmaktadır. Son yıllarda sağlık hizmetleri alanında artan bu ihtiyaçları karşılamaya yönelik geliştirilen teknolojik gelişmeler dikkat çekicidir. Sağlık hizmetleri alanında popülaritesi önemli ölçüde artan teknolojik gelişmelerden biri de giyilebilir cihazlardır. Yaşlılar için tasarlanmış giyilebilir cihazlar, düşme algılama, sağlık ve acil durum verilerini izleme, kan testine ihtiyaç duymadan kan şekeri seviyelerini takip etme gibi pek çok hizmeti sunabilmektedir. Bu gelişen teknoloji hem yaşlılar ve bakım verenler hem de sağlık sistemleri açısından bazı avantajlar sunmaktadır. Bu teknoloji sağlık sorunları konusunda erken uyarı sistemleri ile erken müdahalede bulunmayı sağlayabilir. Erken müdahale ile daha iyi sağlık sonuçlarına katkıda bulunabilir. Düşme riski yüksek olan yaşlı yetişkinleri belirleyerek eyleme geçmek için bilgi sunabilir. Yaşlıların ciddi diyabet komplikasyonlarından kaçınmasına yardımcı olabilir. Yaşlı bireyin bakımını üstlenen kişiler için yaşlı bireyin sağlığını koruma ve iyileştirme fırsatı sunabilir. Büyüyen bir alan olarak karşımıza çıkan giyilebilir teknolojiler geliştirilirken yaşlı nüfusun bilişsel, motor ve duyusal işlevleri ile giyilebilir cihazlarla ilgili olası sorunlar da göz önünde bulundurulması gereken konulardandır.
Anahtar Kelimeler: Yaşlı, Teknoloji, Giyilebilir Cihazlar

ABSTRACT
All over the world, the population is turning into an aging society. According to TUIK 2020 results (Turkey Statistic Institution), while the population aged 65 and over, which is considered the elderly population, was 6 million 495 thousand 239 people in 2015, it became 7 million 953 thousand 555 people in 2020. In short, the proportion of the elderly population has increased by 22.5% in the last five years. As the elderly population that creates this change increases, the need for new solutions for this population to live independently and to meet their care demands also increases. Technological developments which have been developed to meet these increasing needs in the field of health services in recent years are remarkable. Wearable devices are one of the technological developments the popularity of which has increased significantly in the field of health services. Wearable devices designed for the elderly people can offer many services such as fall detection, monitoring health and emergency data, and monitoring blood sugar levels without a blood test. This developing technology offers some advantages in terms of both the elderly and caregivers and health systems. This technology can provide early intervention with early warning systems for health

problems. Better recovery results can be achieved with early intervention. It can offer information to take action by identifying older adults at high risk of falling. It can help the elderly people to avoid serious diabetes complications. It can provide an opportunity to protect and improve the health of the elderly people for those who take care of the elderly person. While developing wearable technologies, which is a growing field, the cognitive, motor and sensory functions of the elderly population and possible problems with wearable devices are also issues to be considered.

Keywords: Elderly, Technology, Wearable Devices

GİRİŞ

65 yaş üstü yaşlı bireyler toplumsal değişimi yansıtan ve giderek büyüyen demografik bir grubu oluşturmaktadır. Küresel bir durum haline gelen nüfus yaşlanması neredeyse dünyadaki her ülkede büyüme eğilimindedir. 2019'da 703 milyon olan 65 yaş ve üstü dünya nüfusunun (T.C. Aile, Çalışma ve Sosyal Hizmetler Bakanlığı, 2020), 2050 yılında 1,5 milyara çıkacağı (United Nations, 2017) ve yaşlıların %80'inin düşük ve orta gelirli ülkelerde yaşıyor olacağı öngörülmektedir (WHO, 2018). Bireyler yaşlandıkça hastalık ve engellilik daha yaygın hale gelirken (Hill ve diğerleri, 2013), bireylerin aynı anda birkaç sorunu yaşama olasılığı da artmaktadır. İnsanlar yaşlandıkça ve yaşlanan bu nüfus arttıkça sağlık bakımına olan gereksinim de artmaktadır (Hill ve diğerleri, 2013).

Yaşlılarla ilgili planlamalar yaparken sadece yaşlılıkla ilişkili kayıpları iyileştiren sağlık bakım gereksinimlerine odaklanan yaklaşımları değil, aynı zamanda iyileşme, adaptasyon ve psikososyal desteği güçlendirebilecek ortam ve yaklaşımları da dikkate almak gerekmektedir (WHO, 2018). Bunu sağlayacak olası bir çözüm de giyilebilir teknolojilerdir (Yazar ve diğerleri, 2014). Giyilebilir teknolojilerin ortaya çıkışı ve ilerlemesi yaşlı bireylerin tüm bakım gereksinimlerinde kullanılabilecek uygulanabilir cihazlar geliştirmek için önemli bir kapı açmıştır (Wang ve diğerleri, 2017).

Popülaritesi giderek artan giyilebilir cihazlar, yaşlı yetişkinlerin özerkliğine yardımcı olma, onları destekleme ve sağlıklı bir yaşam tarzı sürdürmeye teşvik ederek yaşam kalitelerini iyileştirme potansiyeline sahiptir (Popescu, 2014). Sağlık sistemleriyle entegre edilebilen giyilebilir cihazlar, yetişkinlerin yaşamsal bulguları ve aktivite düzeyleri başta olmak üzere sağlıklarına ilişkin doğru ve güncel bilgiler sağlayabilir (Grover ve diğerleri, 2018). Bu entegrasyon da yaşlı hastaların bakımını iyileştirmeye ve yeniden kabul oranlarını düşürmeye yardımcı olabilir (Farivara ve diğerleri, 2020). Böylece yaşlıya sunulan destek hizmetleri ve ekonomiye olan yük de hafifletilebilir.

AMAÇ

Bu çalışma, gelişen teknoloji içerisinde yaşlı sağlığını çeşitli yönleriyle etkileyen giyilebilir teknolojilerin incelenmesi ve giyilebilir teknolojiler hakkında bilgi verilmesi amacıyla yapılmıştır. Çalışmada öncelikle giyilebilir teknolojinin tanımı yapılmış ve yaşlılar için giyilebilir teknoloji ürün örneklerine yer verilmiştir. Sonrasında giyilebilir teknolojilerin yaşlı sağlığı ve bakım hizmetleri üzerindeki potansiyel faydalarına ve yaşlı bireyler için giyilebilir teknoloji engellerine değinilmiştir.

GİYİLEBİLİR TEKNOLOJİLER

Tarihi 13. yüzyıla kadar uzanan giyilebilir teknolojilere ilk olarak gözlük ve düzeltici lens olarak rastlanmaktadır. Ardından 17. yüzyılda ilk işitme cihazı, 19. yüzyılda ilk cam kontakt lens geliştirilmiştir. 20. yüzyılın ortalarında ise elektronik teknolojilerin gelişmesi sayesinde çok sayıda giyilebilir cihaz üretilmesi ile gelişme sağlanmıştır. Giyilebilir teknolojilerin en hızlı gelişimi ise 21. yüzyılda hastaların sağlık durumlarının her an takip edilmesini sağlayan ve bireyin üzerine yerleştirilen sensörler ile olmuştur (Casselman ve diğerleri, 2017: 1011).

Giyilebilir teknolojiler en basit tanımıyla, vücut veya aksesuarların içerisine yerleştirilen tüm elektronik teknoloji ve cihazlardır. Giyilebilir teknolojiler, bilgisayar ve cep telefonu gibi cihazların yaptığı görevleri yerine getirebilmektedirler. Ek olarak bazı durumlarda algılama ve izleme özelliği gibi pek çok alanda onlardan daha iyi performans gösterebilmektedirler. (Tehrani ve Michael, 2014). Bu grupta yer alan cihazlar internet üzerinden veri alma ve gönderme özelliğine sahiptir ve işleyişinin karmaşık olduğu düşünülse de kullanımları oldukça pratiktir (Kenton, 2019). Yüksek performans gösteren bu teknolojiler ayrıca,

- Kaliteli olmalı,
- Tekstillere kolaylıkla entegre edilebilmeli,
- Doğru, geçerli, güvenilir ve tekrarlanabilir veriler sunmalı,
- Günlük yaşama sorunsuz bir şekilde adapte edilebilmelidir (Park ve Jayaraman, 2003).

Giyilebilir teknolojiler; giyilebilir sağlık, tekstil ve tüketici elektroniği olarak üç kategoride değerlendirilmektedir. Bu kategorilerde yer alan akıllı kıyafetler, takılar, kulağa takılan cihazlar, başa takılan ekranlar, dış iskelet ve tıbbi cihazlar giyilebilir teknoloji ürünlerine örnek olarak verilebilir (Mordor Intelligence, 2015). Çeşitli ürünleri bünyesinde barındıran giyilebilir teknolojilerin pek çok farklı kullanım alanı bulunmaktadır (Kirk, 2014: 45). Bu alanlardan biri de sağlık endüstrisidir ve aşağıda bu alanda yaşlı bireyler için kullanılabilecek teknoloji örneklerine yer verilmiştir.

YAŞLILAR İÇİN GİYİLEBİLİR TEKNOLOJİLER

Günümüzde gelişmekte olan giyilebilir sağlık teknolojisi ürünleri çok çeşitlidir. Bunlar,

- İlaç almayı hatırlatan uyarı sistemleri,
- Diyabet hastaları için glikoz seviyesini ölçen (Casselman ve diğerleri, 2017: 1012) ve belirli zamanlarda insülin enjekte eden cihazlar,
- Fiziksel aktivite ve biyokimyasal verileri gerçek zamanlı olarak izleyen ve bunun bildiriminde bulunan cihazlar (Bostancı, 2015: 549),
- Çeşitli uygulamalar aracılığıyla akıllı telefonlara bağlanabilen ve veri akışını sağlayabilen akıllı EKG ölçerler, tansiyon monitörleri ve ultrasonlar,
- Yaşlılarda düşüşü algılayarak acil servislere otomatik olarak bildirimde bulunan bileklikler (Casselman ve diğerleri, 2017: 1012),
- Yaşlıların yetersiz görme yeteneğini yönetmelerine yardımcı olabilecek bilgisayar ekran görüntüsünü gözün önüne getiren, bir manzara veya kişinin yüzü hakkında bilgi sağlayabilen akıllı gözlükler ve cam sistemleri (Khokale, 2017),
- Beyin hasarını tespit eden kafa bandı ve yazılım platformu,
- Kullanıcının izleyebileceği akıllı kontakt lensler,
- Parkinson hastalığı olan hastalara yardım edebilecek giyilebilir kumaş (Aydın, 2019: 75),
- Hastalara taşınabilir ağrı kesici sağlamak için tasarlanmış yamalar olarak örneklendirilebilir (Ultimate Medical Academy, 2019).

YAŞLI BİREYLER İÇİN GİYİLEBİLİR TEKNOLOJİLERİNİN POTANSİYEL FAYDALARI

Son yıllarda giyilebilir teknolojilerin önemli uygulama alanlarından biri olan sağlık endüstrisinde sağlık teknolojilerine olan ilgi artmıştır. Gelişen bu teknoloji ile elde edilen veriler, sağlığın yönetilmesi, sağlık durumunun uzaktan izlenmesi, sağlık maliyetlerinin düşürülmesi ve sağlık hizmetlerinin iyileştirilmesi gibi pek çok konuda başta yaşlı ve hasta bireyler olmak üzere, sağlık profesyonellerine, sağlık kuruluşlarına ve topluma bazı avantaj ve kolaylıklar sunabilmektedir (Erdmier ve diğerleri, 2016: 141).

Sağlık alanında kullanılan giyilebilir teknolojiler, sağlık hizmet sunucularına bireylerin sağlık durumunu değerlendirmek için veri oluşturabilir. Kalp ve solunum hızı, kan basıncı, vücut ısısı, fiziksel aktivite (Poongodi ve diğerleri, 2020: 247), beyin aktivitesi, uyku düzeni, glikoz seviyesi, stres (Salah, Macintosh ve Rajakulendran, 2014) ve duygu durum gibi dijital ölçüm ile elde edilen veriler hekimler için bireyi değerlendirmek adına kaliteli bilgiler sunabilir (Poongodi ve diğerleri, 2020: 247). Uzun süre izlenen bu verilerle başta hipertansiyon, diyabet, kardiyovasküler hastalıklar ve obezite olmak üzere bazı hastalıkların erken teşhisi ve tedavisi kolaylaşabilir veya önlenmesi sağlanabilir (Bonato, 2010: 2021). Hemşirelerin hasta sorunlarını iyileştirmesine yardımcı olacak veriler bakım planına dahil edilen girdiler olarak kullanılabilir (Bove, 2019). Ayrıca acil durumlarda hasta yakınlarına veya sağlık hizmeti sunucularına haber verilmesini sağlayarak erken müdahalenin yolu açılabilir (Aydan ve Aydan, 2016). Bunu sensörler aracılığıyla bireylerin sağlık durumunun izlenmesi, sağlık durumu hakkında bilgi sağlanması ve sağlık verilerinin saklanması şeklinde bir altyapıyla sunarak yapar (Poongodi ve diğerleri, 2020: 247). Giyilebilir teknolojileri kullananların kendilerini izleme, olumsuz davranışları tespit etme ve bu davranışları azaltma fırsatı sunabilir. Ayrıca hastaları sağlığı yönetme ve kontrol etme konusunda motive edebilir. Hastalıklara karşı önlem alınmasını sağlayabilir. Zamandan tasarruf etmeye yardımcı olabilir (Aydan ve Aydan, 2016). Giyilebilir teknolojiler ile elde edilen izlem verileri, yaşlıların bakım maliyetlerini düşürmeye yardımcı olabilir. Yaşlının hastalık risklerini tahmin ederek yaşam kalitesini iyileştirebilir. Öte yandan, toplanan veriler yaşlının ulusal veya küresel sağlık durumunu değerlendirmek ve yaşlı politikalarına yön vermek amacıyla da kullanılabilir (Wang ve diğerleri, 2017). Öte yandan giyilebilir teknolojiler ile hastalıkların önlenmeye çalışılması sağlık hizmet sunucularının görev ve sorumluluklarına ilişkin yüklerinin azalmasına yardımcı olabilir (Ananthanarayan ve Siek, 2012: 236).

YAŞLI BİREYLER İÇİN GİYİLEBİLİR TEKNOLOJİLERİN DEZAVANTAJLARI

Global anlamda etki uyandıran bu teknoloji sunduğu sayısız faydalarla birlikte bazı tehditleri de içerebilmektedir. Giyilebilir teknolojik ürünlerin yarattığı rahatsızlık hissi, ciltte kaşıntı ve tahrişe yol açması, pil ömrü vb. gibi diğer durumlar belli başlı dezavantajlar arasında yer almaktadır (Kekade ve diğerleri, 2018).

Veri güvenliği ve verilerin gizliliği, kötü amaçlı yazılım, bağlantı bağımlılığı ve büyük miktarda veriyi verimli bir şekilde işlemek için entegre araçların eksikliği gibi tehdit unsurları zayıf yönler olarak kabul edilmektedir (Bostancı, 2015: 551). Büyük miktarda veriler ile uğraşmak güvenlik ve gizlilik gibi konuların çoğu zaman ihmal edilmesine yol açabilir. Bu nedenle giyilebilir sağlık teknolojilerini güvenli hale getirmek ve hasta verilerinin korunmasını sağlamak oldukça önemlidir (Krey, 2019: 1).

YAŞLI BİREYLER İÇİN GİYİLEBİLİR TEKNOLOJİ KULLANIMININ ÖNÜNDEKİ ENGELLER

Yaşlı bireyler tarafından giyilebilir teknolojinin benimsenmesindeki en yaygın engeller arasında; erişim zorluğu, kullanımı için yardıma ihtiyacın olması, mahremiyet üzerindeki etkileri, tasarım kaynaklı azaltılmış el becerisine sahip olmaları, teknolojinin nasıl çalıştırılacağının ve kapatılacağının unutulması, yanlış çalan alarmlar ve cihazların maliyeti yer almaktadır (Fischer ve diğerleri, 2014; Peek ve diğerleri, 2014; Zhao ve diğerleri, 2018; Liu ve diğerleri, 2016; Alshahrani ve diğerleri, 2019). Giyilebilir teknoloji ürünlerinin karşılaştığı diğer büyük engellerden biri de kullanıcıların ve sağlık sistemlerinin uyarlanabilirliğidir. Ani ve kökten yapılan teknolojik değişimlerin toplumlardaki bireyler tarafından her zaman kolayca kabul edilmeyişi ve bu teknolojileri kullanmaktan kişilerin rahatsızlık duyabileceği unutulmamalıdır. Ek olarak güvensizlik veya teknolojiye aşırı maruz kalma gibi nedenlerle bu teknolojileri kullanmakta isteksizlik veya direnç gösterebilirler (Rutherford, 2010: 23). Yine, genç yetişkinlerle karşılaştırıldığında, yaşlı yetişkinler yeni teknolojileri kullanırken daha fazla hayal kırıklığı yaşama eğilimindedir (Fisk ve diğerleri, 2009). Giyilebilir teknolojileri benimseyen yaşlı yetişkinler ise çevrelerinden damgalanma ile karşı karşıya kalabilirler (Lewis ve Neider, 2017). Bu durumlar giyilebilir teknolojileri kullanmama ile sonuçlanabilmektedir (Fisk ve diğerleri, 2009). Bu nedenle bu nüfus grubu tarafından giyilebilir teknolojilerin kullanımı ile oluşabilecek sosyal etkiler de dikkate alınmalı ve aşırı hantal veya yaşlı yetişkinlere herkesten farklı olduklarını hissettirebilecek modası geçmiş cihazların tasarım ve kullanımından kaçınılmalıdır (Lewis ve Neider, 2017). Ayrıca bu teknoloji alanının yaşlı bireylere entegrasyonunda, yaşlı bireyin bilişsel, duyusal ve motor performansına bağlı güçlükler yaşanacağı da göz önünde bulundurulmalıdır.

SONUÇ

Sağlık sektöründe teknoloji kullanımı artan yaşlı nüfus, bu nüfustaki sağlık sorunlarında diğer yaş gruplarına göre yatkınlığın artışı ve bu nüfusa yönelik beklentilerin çeşitlenmesi nedeniyle hızlı bir büyüme trendine girmiştir. Bu hızlı büyüme trendi içerisinde giyilebilir teknolojilerin özellikle yaşlı yetişkinler için sayısız potansiyel faydası bulunmaktadır. Aynı zamanda yaşlıya hizmet sunan sağlık profesyonellerini, teknoloji pazarını ve hatta toplumsal refah düzeyini önemli derecede etkilediği de bilinmektedir. Bu nedenle, yaşlının karşılaştığı ya da karşılaşacağı sağlık sorunlarına yönelik zorlukların üstesinden gelmek, yaşlının yaşam kalitesini arttırmak ve sağlık hizmet sunucularına yönelik kolaylıklar sağlamak adına bu teknolojilerin incelenmesi ve bu konuya yönelik farkındalık oluşturulması gerekmektedir. Ayrıca yaşlı nüfusa yönelik en uygun ve geçerli teknolojinin bulunması için yeni tasarım denemeleri yapmak ve kullanımı arttırmak adına yaşlılar arasında giyilebilir teknoloji engellerinin anlaşılması gerekmektedir. Bu çalışma genel bir bakış sağlamak için yaşlı bireylerde giyilebilir teknolojiler konusunu özetlemektedir.

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THE INFLUENCE OF AGRICULTURAL USE OF SOILS OF THE DRY SUBTROPICAL ZONE ON ITS MORPHOLOGICAL PROPERTIES

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Abstract

The aim of the research was to study the influence of natural vegetation and intermediate sowings of fodder crops on the formation in the profile of (WRB, 1998) Gypsisols and Gleyic Calsisols and Irrigated Gypsisols and Gleyic Calsisols soils of the dry-steppe and semi-desert zones of Azerbaijan genetic horizons. It has been established that significant morphological changes are common to the thickness of the humus horizon, the depth of carbonates and agrochemical parameters of the studied soils. Their maximum values in the arable layer are established in Irrigated Gypsisols and Gleyic Calsisols soils under the collection of 3 green mass crops per year from 1 ha: the thickness of the humus horizon increased to 0.25 and 0.27 cm, respectively, humus - up to 2.73 and 3.00%, the amount of absorbed bases - up to 25.71 and 30,80 mg-eq / 100 g of soil, mobile phosphorus - up to 30.9 and 34,00 and exchange potassium - up to 317.3 and 423,1 mg / 100 g of soil. In accordance with the WRB system (2015), Irrigated Gypsisols can be classified - Irragric Cambisols (Protocalcic, Clayic), and Gleyic Calsisols - Irragric Gleyic Calcisols (Calcic, Loamic).

Keywords: horizon thickness, humus, absorbed bases, mobile phosphorus, exchange potassium, agrochemical properties

Introduction

Human economic activity, as a factor of soil formation, affects the soil-forming process both directly and indirectly through other factors, taking on the leading functions of regulating the interrelation between soil and cultivation crops[1].Some researchers believe that a natural zonal soil formation process occurs in arable soils, which does not differ from the process under natural vegetation, while others point at profound fundamental changes in the natural soil formation process [2].The transformation of natural biocenoses into agrocenoses is always accompanied by a change in morphological and physical parameters, as well as the qualitative and quantitative composition of organic residues. A quantitative account of such changes makes it possible to determine the speed and direction of soil formation processes [3].Accounting for the content and reserves of nutrients, their distribution in the soil profile makes it possible to establish the amount of available nutrients for crops, their biogenic accumulation, the direction of migration and participation in the biological circulation of elements, which is very important for increasing agricultural production in the dry subtropical zone of Azerbaijan.The aim of the study is to assess changes in the morphological and agrochemical parameters of soils in the dry subtropical zone of Azerbaijan under the influence of their long-term agricultural use.

Prerequisites and means for solving the problem

The studies were carried out in 1998-2018. on virgin (Gypsisols, in WRB 2012) and irrigated gray-brown (Irragri Gypsisols, in WRB 2012, Absheron) and meadow-serozem (Gleyic

Calcisols and Irragri Gleyic Calcisols, in WRB 2012, Kura-Araksin lowland) soils according to the scheme:1. virgin land (Carex pachystylis, Poa bulbosa, Caragana frutex, Alhagi, Artemísia, Sálsola), 2. Secále cereále → Zéa máys; 3. Medicágo; 4. Zéa máys (spring sowing); 5. Secále cereále + Vicia sativa + Brássica nápus → Zéa máys + Glycine max + Sorghum + Amaránthus → Hórdeum + Vicia sativa; 6. Hórdeum (for grain, farm sowing). Cultivation agrotechnics - zonal with some changes for each option. Repetition - 4-fold, plots area -72 m2. The climate is subtropical with dry hot summers, the amount of active t^0 is 4500 - 48480C, the arrival of FAR is 120-133 kcal / cm2, the amount of precipitation is 180 - 330 mm per year; days with air t^0> 100-285-330 and soil> 50 -315-360.

The laying of soil sections, their description, the selection of soil samples and the establishment of the preliminary classification name of the soil in the field were carried out according to the Guidelines for Soil Description (FAO, 2012) and according to the methods[4-7]. In soil samples, the following were determined: humus, mobile compounds of phosphorus and potassium, pH, carbonates [8]. Based on morphological and physicochemical properties, the name of gray-brown and meadow-serozem soils was given according to the International Soil Classification based on the Abstract Base (WRB) 2015[7].

Virgin and irrigated gray-brown soils (Gypsisols and Irragri Gypsisols, in WRB 2012) are located at an altitude of 50-165 m above sea level, geographic coordinates - 40 ° 28'871 "N and 49 ° 39'969" E, and meadow-sierozem soils (Gleyic Calcisols and Irragri Gleyic Calcisols, in WRB 2012) - located at an altitude of 48.80 m above sea level, geographical coordinates - 40 ° 29´37.689 "N and 47 ° 43´34.456" E.

Results and discussion.

The morphological features of the soil profile are a stable external characteristic of soils, and even a short-term anthropogenic influence on the soil leads to changes in morphological features [9]. That is, a plow horizon is formed, with characteristic features that differ from the original genetic horizons of natural soils and is a cultivated horizon with the preservation of the zonal appearance [10, 11]; it affects the direction and intensity of soil formation.

Gypsisols and Irragri Gypsisols

Studies have established that significant changes in the morphological profile of the soil are manifested mainly in the form of an increase in the humus horizon, the depth, as well as the thickness of the carbonate layer. These changes increase on the sowing of row crops, permanent cultivation of barley and on virgin soil, where the depth of occurrence of carbonates is higher, which is associated with higher evaporation from the surface associated with the thinning of the vegetation cover.

Permanent sowing of Hórdeum (variant 6) reduces the thickness of the humus horizon of the soil due to the low input of fresh organic matter into the soil. In all studied variants of the experiment in accordance with the "Classification and diagnostics of soils of the USSR" [12] and FAO 2015 [7] - Gypsisols and Irragri Gypsisols - thin, low-humus, which shows the homogeneity of the soil cover of the experimental area.

For the sample, we present a morphological description of the soil profile of section **No. A-12** (according to WRB-2015), laid down in the 5th option. The territory is located in the Experimental Economy Research Institute of Fodder, Meadows and Pastures of the Ministry of Agriculture of Azerbaijan, 500 m from the Baku-Shemakha highway, at an altitude of 87 m above sea level, geographical coordinates - 40028'26.37 "N, 49039'38 , 81 "E. SU, 27 ° C; WC - 2, LP - <100. Soil - Irragri Gypsisols.

The parent rocks are highly gypsum-bearing clayey deposits of deluvial origin and weathering products of tertiary clays. AA4M, IB, IF, vegetation: Secále cereále + Vicia sativa + Brássica nápus → Zéa máys + Glycine max + Sorghum + Amaránthus → Hórdeum + Vicia sativa, ST, Hp - 0-25 cm.

A1 0-25 10 YR4/2, N, CL, GR, PD3, M (2-5 mm) and C (>25cm 5mm), (M - < 2mm – 200, > 2mm->20), F - 0.5 -2 mm, E,M, M –15-40%, ca, *pF-3, SC, MO 2-10% and N, ST, SC;

A2 25-53 10 YR5/2, CL , PD3, SB, FRF, AS, E, M - 15- 28cm 40%, C, F, MO 2-10% and N, PM, ca,P, I;

B 53-77 10 YR 4/6, CL, FM, FRF, M –2-5 mm, VF- < 0.5- 24 mm, C, F-0.5-2 mm and F -< 2mm -20-50% and > 2mm-2-5%, ST 10-25, ca, PM, HA, *pF 3-2, D;

B/C 89-117 10 YR 5/4, CL, PD3, CR, F- 0.5-2 mm, 40 cm VF -< 0.5mm, F –0.5-2mm, C, ST 10-25%, PM, SL 0-5%,C;

C 117-129 7.5 YR 4/6, CL 25-40% silt, PD4, F - 0.5-2mm, 12cm MO 2-10%, VF, SC, SL, ST, N, S, pF*-3, V –< 2%, C;

C 129-152 2.5 YR 8/3, CL, LU, PD4, SC , MO 2-10% 23 cm and N, CS, F.

The results of the morphological description of section №A-12 show that the thickness of the arable horizon (0-25 cm) is 25 cm. The profile of this section up to the Cca horizon (117-129 cm) is described by the main tone 10YR, and in the Cca horizon (117-129 cm) - in a tone of 7.5 YR, deeper - in a tone of 2.5 YR [14]. In the morphological description of the soil profiles of other variants of the experiment, the following horizons were established: A' from 22 to 24 cm thick; A"- from 35-49 to 51 cm; B - from 57-65 to 75 cm; B/C - from 100 cm to 113 cm and C - from 121-129 to 148 cm, which corresponded to the statistical parameters of the morphological properties of the gray-brown soils of the Absheron Peninsula (Table 1). The middle of the soil profile consisted of transitional horizons (from humus to parent rock - B, B/C and C. Their total thickness in virgin soil was 64 cm, Secále cereále → Zéa mays - 49 cm, Hórdeum (farm sowing) - 64 cm. The Significant level of the occurrence of carbonates is noted under Hórdeum (65-119 cm), slightly under the Zéa máys of spring sowing (110-120 cm) and is lowered to a depth of 129-152 cm in variant 5. In variants 3 and 5, the root system of Medicágo and grass mixtures (variant 5) intensively used moisture from the layer of 0-51-53 cm and thereby slowed down the rising migration of carbonates. For 20 years, the capacity of A' under Hórdeum (farm sowing) was 22 cm, under Medicágo - 24 cm, and the highest - under variant 5 (25 cm). This is completely logical - the different depth soil cultivation, depending on the type of intermediate mixed sowing of crops, in order to obtain 3 harvests of green mass per hectare per year, different depths of penetration by the root system of crops and the year-round supply of fresh organic matter of grass mixtures contributed to the approach of soil formation processes to virgin analogues.

Table 1: Agrochemical indicators for the genetic horizons of the morphological profile of gray-brown soil

Variant	Horizon, см	Power, cm	pH of water	Hhumus,%	mg-eq/ 100 g of soil		mg / kg soil	
					Ca	Mg	P2O5	K2O
Notes: Original soil, № A-13	A1	0-22	7,9	2,19	14,34	9,50	20.0	242.8
	A2	22-50	8,9	1,28	10,78	9,36	16.0	203.0
	B	50-75	9,2	0,98	8,40	10,22	14.0	157.3
	B/C	75-100	8,0	0,50	6,95	7,90	5.3	110.5
	C	100-122	8,8	0,10	6,85	3,95	-	37,9
1.Virgin, № R-1	A1	0-13	8,1	1,96	15,0	7,36	11.7	226.6
	A2	13-35	8,6	1,34	12,75	11,40	7.00	211.0
	A/B	35-57	8,8	0,67	11,25	5,86	5.7	161.3
	B	57-100	8,4	0,38	6,88	8,11	2.00	152.3
	C	100-121	7,8	-	7,81	4,34	0,42	22,6
Secále cereále → Zéa mays, № A-1	A1	0-23	8,2	2, 13	16,24	7,55	18.0	227.0
	A2	23-50	8,6	1,27	12,39	6,45	14.0	195.7
	B	50-75	8,9	0,61	9,44	5,28	11.7	144.3
	B/C	75-100	9,1	0,27	7,96	3,67	5.3	100.7
	C	100- 124	9,1	0,05	7,61	6,70	2,8	46,1
.Medicágo, № A-10;	A1	0-24	8,0	2,51	20,60	10,99	27.8	269.5
	A2	24-51	8,6	1,60	19,76	10,55	20.0	231.2
	B	51-75	8,9	1,20	16,15	8,45	18.7	182.3
	B/C	75-113	8,5	0,52	11,61	4,67	10.6	131.5
	C	113-148	8,0	0,17	9,37	7,42	6,9	76,9
Zéa mays, № A-8;	A1	0-22	8,3	1,88	14,97	5,01	15,6	215.4
	A2	22-49	8,8	1,10	11,75	4,66	12.9	178.5
	B	49-73	9,2	0,55	12,40	6,12	10.2	130.3
	B/C	73-110	9,0	0,15	11,36	4,51	3.7	74.6
	C	100-120	8,3	-	9,17	7,26	1,9	38,7
Secále cereále + Vicia sativa + Brássica nápus → Zéa máys + Glycine max+ Sorghum + Ama-ránthus→Hórde-um+Vicia sativa, № A-12	A1	0-25	8,4	2,73	21,25	4,95	30.9	317.3
	A2	25-53	8,8	1,72	20,40	4,45	25.7	241.0
	B	53-77	8,9	1,32	16,80	6,00	22,3	192,3
	B/C	77-117	9,0	0,71	13,80	11,0	17.0	140,0
	C	117 -129	8,0	0,17	10,87	6,08	10,4	92,1
Hórdeum, № A-6	A1	0-22	8,1	1,60	13,87	4,64	13.1	158.7
	A2	22-43	8,6	1,19	12,31	4,12	10.4	121.6
	B	43-65	8,8	0,60	11,75	4,66	5.0	77.9
	B/C	65-100	9,0	0,09	9,89	4,59	2.7	50.1
	C	100-119	8,2	0,01	5,26	4,36	1,0	33,1
	C	119-129	7,6	0,01	3,11	4,09	traces	11,7

It has been established that the reaction of the medium in all variants of the upper horizons is weakly alkaline (pHwater - 8.0-8.1), and in the lower ones - upon transition to the carbonate horizons - alkaline (pHwater - 9.0-9.1), which corresponds to irrigated gray-brown soils of Azerbaijan [13]. Over a twenty-year period of permanent cultivation of Hórdeum, the humus content in the A' layer was –1.60%, in the A"–1.19%, which is due to an increase in the mineralization of organic matter and a lack of plant material. In the variant of obtaining 3 harvests of green mass per year per hectare, the humus content in A' is higher than –2.73%, which is associated with the year-round intake of fresh plant residues of grass mixtures into the soil. The largest amount of absorbed bases with a predominance of calcium cation, mobile phosphorus and exchangeable potassium was noted in the soil also under variant 5. It was noted that the amount of absorbed bases increased with an increase in humus in the soil, which indicates the important role of humus in the formation of an absorption complex in the upper soil horizons. Based on the data

obtained according to the international classification of soils of the world (WRB 2015), irrigated gray-brown soils can be classified as Irragric Cambisols (Protocalcic, Clayic).

Gleyic Calcisols and Irragri Gleyic Calcisols (in WRB 2012). Studies have shown that permanent sowing of Hórdeum (variant 6) reduces the thickness of the humus horizon of the soil. In all studied variants of the experiment in accordance with the "Classification and diagnostics of soils of the USSR" [12] and FAO 2015 [7] - Gleyic Calcisols and Irragri Gleyic Calcisols - thin, low-humus, which shows the homogeneity of the soil cover of the experimental area. For the sample, we present a morphological description of the soil profile of section № K-3 (according to WRB 2015) under variant 5. The territory is located in the Experimental Economy of the Institute of Soil Science and Agrochemistry in Ujar (Kura-Araksin lowland), 600 m from the Baku-Kazakh highway, at an altitude of 16 m above sea level, geographical coordinates - 40030'20.13"N , 47040'26.14"E. SU-29° C, WC 2, LP -$<10^0$.

Soil - Irragri Gleyic Calcisols. The parent rocks are deluvial-alluvial loams. AA4M, IB, IF, vegetation: Secále cereále + Vicia sativa + Brássica nápus → Zéa máys + Glycine max + Sorghum + Amaránthus → Hórdeum + Vicia sativa, ST, Hp - 0-27 cm.

A1 0-27 7,5YR 5/6, CL, SB + GR, FR, M (2-5mm) and 27 cm C (>5mm), F–0.5-2mm, E, M, M - 15-40%, *pF 3-2, SC, MO 2-10% and N;

A2 27-56 7,5YR 5/6**,** CL, SB +CR,F, FR, M (2-5mm) and 29 cm C (>5 мм), F–0.5-2mm, E, M, M – 15-40%,*pF -2, PM, MO 2-10% and N, C;

A2/B 56-77 7.5 YR 5/3, CL, SB, PD4 , F, M - 15-40%, M (2- 21cm 5 mm) and C (>5mm), F – 0.5-2mm, *pF -2, SC, ST 10- 25%,N, C, W;

B/C 77-122 2,5 YR 8/7, PD4 , CL, F, CR +SB, F, M (2-5 45 cm mm), F- 0.5-2mm, *pF -2, SC, MO 2-10% and N, G, İ;

C 122-155 10 YR 6/3, C, PD4, F -2-5%, LU, FM -2-6mm, MO 33 cm 2- 10%, SC, *pF 3-2 .

The morphological description of section № K-3 shows that the thickness of the arable (0-27 cm) horizon is 27 cm. The profile of this section up to the B/C horizon (77-122 cm) is described by the main tone 7.5YR, and in the B/C horizon (77-122 cm) - in 2.5 YR tone, then - in 10 YR tone [14]. In the morphological description of the soil profiles of other variants of the experiment, the following horizons were established: A' (arable horizon) with a thickness of 22 to 26 cm; A" (subsoil) - from 44 to 54 cm; B - from 63-75 to 76 cm; B/C - from 103 cm to 119 cm and C - from 129 -137 to 152 cm, which corresponded to the statistical parameters of the morphological properties of irrigated meadow-serozem soils of the Kura-Araks lowland. On virgin soil, these parameters along the soil profile corresponded to 14, 37, 61, 102, 131 cm (Table 2). The middle of the soil profile for all variants consisted of transitional horizons (from humus to parent rock - B, B C, and C. A significant level of occurrence of carbonates was noted under Hórdeum (63 - 103 cm), somewhat lower under Zéa máys of spring sowing (74 - 109 cm) and lowered to a depth of 122-155 cm in variant 5.

The root system of Medicágo and grass mixtures (variant 5) intensively used moisture from the layer of 0-54-56 cm and thus slowed down the rising migration of carbonates.

For 20 years, the thickness of the arable horizon (A1) under Hórdeum (farm sowing) was 22 cm, under Medicágo - 26 cm, and the largest - under variant 5 (27 cm).

This is due to the different depth soil cultivation, depending on the type of intermediate mixed sowing of crops in order to obtain 3 crops per hectare per year, the depth of penetration of the root system of crops and the year-round supply of fresh organic matter.

Table 2: Agrochemical indicators for the genetic horizons of the morphological profile of meadow-serozem soil.

Variant	Horizon, см	Power, cm	pH of water	Humus,%	mg-eq/ 100 g of soil		mg / kg soil	
					Ca	Mg	P2O5	K2O
Original soil,№ K-1	A1	0-23	7,95	2,39	17,73	6,17	16,0	257.1
	A2	23-51	8,79	1,90	12,37	6,08	15.0	140.1
	B	51-75	8,59	1,05	7,59	5,86	11.4	99.1
	B/C	75-109	8,72	0,26	5,27	6,21	5.3	64.7
	C	109-139	7,99	trace	6,02	6,00	1,7	35,9
Virgin, № M -24	A1	0-14	7,88	2.40	18,83	5,05	27,3	290,2
	A2	14-37	7,91	1,85	14,05	6,37	12.8	230,4
	A/B	37-61	7,87	1,15	11,30	6,87	9.2	181,5
	B	61-102	7,86	0,42	7,06	8,20	2.0	119,0
	C	102-131	7,69	0,10	4,67	3,69	trace	44,1
Secále cereále → Zéa mays, № K-4	A1	0-25	7,82	2.25	19,47	3,34	19,3	291,2
	A2	25-49	8,01	1,83	11,20	4,40	17,6	163,6
	B	49-75	8,10	0,89	7,56	5,80	11,3	109,8
	B/C	75-110	8,91	0,37	5,23	8,05	4,5	52,7
	C	110-141	8,66	0,07	5,00	6,05	2,3	54,7
Medicágo, № K-6	A1	0-26	7,88	2.82	20,32	8,50	29,5	397,5
	A2	26-54	8,22	2,07	17,17	6,00	24.3	200,4
	B	54-76	8,13	1,45	15,72	7,00	17,5	137,3
	B/C	76-119	8,79	0,70	10,00	9,20	7,4	90,5
	C	119-152	8,77	0,23	8,11	4,25	6,2	77,9
Zéa mays, № K-8	A1	0-23	8,11	2.13	18,37	2,94	17,3	238.0
	A2	23-45	8,48	1,33	11,04	5,29	16,1	134.0
	B	45-74	8,92	0,80	9,85	4,19	5,2	83,4
	B/C	74-109	7,89	0,23	9,32	5,71	3.0	30.8
	C	109-137	8,69	trace	4,76	7,11	1,7	23,1
Secále cereále + Vicia sativa + Brássica nápus → Zéa máys + Glycine max+ Sorghum + Ama-ránthus→Hórde-um+Vicia sativa, № K-3	A1	0-27	7,69	3,00	21,30	9,50	34,00	423,1
	A2	27-56	8,11	2,38	19,21	8,22	24,60	280,1
	B	56-77	8,45	1,54	18,23	7,77	18,3	169,2
	B/C	77-122	8,68	0,74	15,55	9,21	7,8	100,2
	C	122-155	8,73	0,31	9,33	5,87	3,21	47,8
Hórdeum, № K-11	A1	0-22	8,00	1.96	17,71	3,36	15,4	209,7
	A2	22-44	8,86	1,44	11,00	5,58	13,1	111,2
	B	44-63	7,91	0,75	8,42	5,62	4,0	76,4
	B/C	63-103	8,26	0,13	7,82	5,75	1.0	24,7
	C	103-129	8,00	0,02	4,87	6,09	trace	14,7
	C	129→	9,00	-	2,01	5,11	-	0,79

The reaction of the medium in all variants of the upper horizons is slightly alkaline (pHwater - 7.82-8.0), and in the lower horizons - during the transition to carbonate horizons - alkaline (pHwater - 8.66 - 9.0), which corresponds to irrigated meadow-serozemic the soils of the Kura-Araks lowland [13]. During the period of permanent cultivation of Hórdeum, the humus content in the A' layer of the soil was –1.96%, in A"–1.44%. In the variant Secále cereále + Vicia sativa + Brássica nápus → Zéa máys + Glycine max + Sorghum + Amaránthus → Hórdeum + Vicia sativa, the humus content in A' is higher - 3.0%, in A" (subsoil) - 2.38%, which is due to with a year-round supply of fresh root and stubble residues of grass mixtures to the soil. The largest amount of absorbed bases with a predominance of calcium cation was also noted under variant 5 (in A' it was 30.8 mg-eq / 100 g of soil), gradually decreasing along the profile to 15.2 mg-eq / 100 g (in the C horizon of the soil).

In all variants of the soil profile, the supply of mobile phosphorus and potassium decreased from high in A' to low in the B/C and C horizons. Between the agrochemical indicators of the experimental variants: the humus content, the amount of absorbed bases, the amount of mobile phosphorus and exchangeable potassium, there are close reliable (tf > tst) correlations (0.79 ± 0.16 ... 0.98 ± 0.06). Based on the data obtained according to the international classification of soils of the world (WRB 2015), irrigated meadow-sierozem soils can be classified as Irragric Gleyic Calcisols (Calcic, Loamic).

Conclusion

1. A Munsell color book was used to describe the color of the soil samples. The color of the profiles of the irrigated gray-brown soil is described by the tones of the Munsell scales - 10YR - 7.5 YR and 2.5 YR. And the color of the profiles of the irrigated meadow-serozem soil is in tones 7.5YR -2.5 YR and 10 YR.

2.Under the influence of long-term various agricultural uses, the following genetic horizons are formed in the profile of irrigated gray-brown and meadow-serozem soils: A1, A2, B, B/C, C.

3. Considering these changes, in accordance with the WRB 2015 system, irrigated gray-brown soils can be classified as Irragric Cambisols (Protocalcic, Clayic), and meadow-serozemic soils - Irragric Gleyic Calcisols (Calcic, Loamic).

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ETYMOLOGY OF AZERBAIJANI OYKONYMS
AZƏRBAYCAN OYKONİMLƏRİNİN ETİMOLOGİYASI

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ÖZƏT

Hər bir xalqın tarixini, onun mənşəyini öyrənmək istədikdə, əlbəttə ki, ilk olaraq bu xalqın yaşadığı ərazi araşdırılır. Çünki xalqın illərdən bəri keçib gəldiyi yolun tarixi, adət-ənənəsi, köçəri ruhunun izləri bu yerlərin daşında, torpağında əks olunmuşdur. Eyni zamanda yaşayış yerinin adından da burda yaşayan əhalinin keçmişi, mənşəyi haqqında maraqlı məlumatlar əldə etmək mümkündür.

Azərbaycan ərazisində müxtəlif azsaylı xalqlar yaşadığı üçün bəzi toponim və oykonimlərin yaranmasında bu xalqların milli dili istifadə olunmuşdur.Yer adlarının dəyişməsi prosesi sovet dövründə intensiv olaraq həyata keçirilirdi. Məlumdur ki, bu sovet siyasətinin bir hissəsi idi (Yeykənd (İsmayıllı r.) – Qırmızı Oktyabr – Yenikənd və s.).

Doğrudur, dilin leksik qatı daim inkişaf edir və yenilənir. Biz bunu qloballaşma ilə, elm və texnikanın inkişafı ilə əlaqələndiririk. Eyni zamanda sözlərdə müəyyən fonetik dəyişikliklərin olması da təbii prosesdir. Bunu oykonimlərdə və digər onomastik vahidlərdə də müşahidə etmək mümkündür: Alılar (Cəlilabad r.) – Alar, Avuş (Şərur r.) – Havuş, Fərzəli (Cəlilabad r.) – Fərzili, Gültəpə (Babək r.) – Kültəpə və s. Lakin nəzərə almaq lazımdır ki, bəzən təhriflər və dəyişmələr leksik vahidləri ilkin mənasından uzaqlaşdırır.

Bəzi oykonimlərin etimologiyasına nəzər salaq:

2003-cü ildən Qızıl Qışlaq kimi rəsmiləşdirilmiş Şahbuz rayonu ərazisində yerləşən bu kəndin əvvəlki adı Aşağı Remeşin (Rəməşin) olmuşdur. 1654-cü ilə aid sənədlərdə Xurəmeşin (hurilər, gözəl qadınlar yaşayan yer), 1727-ci ildə Hurçeşin, XIX əsrdə Huremeşin kimi qeydə alınmışdır.

Oytala – (Zaqatala r.) oykonimi tərkibindəki "oy" komponenti "alçaq yer", "çuxur" və s. mənalarda işlənir. Yerli məlumata görə kəndin əsl adı tələffüzdə işləndiyi kimi Heytala (səsli, əks-sədalı tala) olmuşdur. 2004-cü ildən Hüytala kimi rəsmiləşdirilmişdir.

Açar sözlər: oykonim, sənəd, rayon, etimologiya, ərazi.

ABSTRACT

When you want to learn the history of each nation, its origin, of course, first of all, the area where this nation lives is studied. Because the history, traditions and traces of the nomadic spirit of the way the people have traveled for years are reflected in the stones and lands of these places. At the same time, it is possible to get interesting information about the past and origin of the people living here on behalf of the place of residence. Due to the existence of various minorities in the territory of Azerbaijan, the national language of these peoples was used in the formation of some toponyms and oykonims. The process of changing place names was carried out intensively during the Soviet era. It is known that this was part of Soviet policy (Yeykend (Ismayilli region) - Red October - Yenikend). It is true that the lexical layer of the language is constantly evolving and updating. We connect it with globalization, the development of science and technology. At the same time, certain phonetic changes in words are a natural process. This can also be observed in oykonims and other onomastic units: Alilar (Jalilabad district) - Alar, Avush (Sharur district) - Havush, Farzali (Jalilabad district) - Farzili, Gultepe (Babek district) - Kultepe, Kirna (Julfa district) - Kirna, Gargulu (Jalilabad

district).) - Gargili, Mirzayandigah (Shamakhi district) - Marzandi, Siliban (Zagatala district) - Zilban, Ustupu (Ordubad district) - Ustupu and others.However, it should be borne in mind that sometimes distortions and changes take lexical units away from their original meaning.

Consider the etymology of some oykonims: Located in the Shahbuz district, which has been formalized as the Golden Winter since 2003, the former name of this village was Ashagi Remesh (Ramashin). In the documents of 1654, it is registered as Khuremeshin (the place where Khuris, beautiful women live), Khurmeshin in 1727, and Khuremeshin in the 19th century.

Oytala - (Zagatala r.) The "oy" component in oykonimi means "low place", "pit" and so on. processed in meanings. According to local information, the real name of the village was Heytala (voiced, echoed steppe) as it is pronounced. It has been registered as Huytala since 2004. We see from the examples that oykonims are a manifestation of the stone memory of the people, and it is our duty to be careful in this regard.

Key words: oykonim, document, district, etymology, area

GİRİŞ

Toponimlər Azərbaycan onomastikasının geniş bir bölməsini təşkil edir. Respublikamızın ərazisi, əsasən, türk mənşəli toponimlərlə (yer adları ilə) məşhurdur. Oykonimlər toponimlərin geniş yayılmış sahələrindən hesab olunur. Məlumdur ki, bir ərazi toponimiyasında hansı dilə məxsus coğrafi adlar üstünlük təşkil edirsə, o dil həmin ərazinin fonunu əks etdirir, yəni əsas dili hesab olunur.

Hər bir xalqın tarixini, onun mənşəyini öyrənmək istədikdə, əlbəttə ki, ilk olaraq bu xalqın yaşadığı ərazi araşdırılır. Çünki xalqın illərdən bəri keçib gəldiyi yolun tarixi, adət-ənənəsi, köçəri ruhunun izləri bu yerlərin daşında, torpağında əks olunmuşdur. Eyni zamanda yaşayış yerinin adından da burda yaşayan əhalinin keçmişi, mənşəyi haqqında maraqlı məlumatlar əldə etmək mümkündür.

Sirr deyil ki, uzun illər boyu tariximizin taleyi xalqa, millətə qeyri-dost münasibətdə olan əcnəbilərin əlində olmuşdur. Öncə ərəblərin, sonra farsların, daha sonra isə rusların qələmi ilə yazılmış tarixi salnaməmiz. Bu gün mübarizə apardığımız dünyanı bürüyən erməni yalanları, tariximizlə və millətimizlə bağlı dünya ictimaiyyətinə ötürülən yanlış informasiyalar da elə düşmənlərimizin saxtalaşdırılmış məlumatlarıdır.

Azərbaycan Respublikası öz müstəqilliyini elan etdikdən sonra dünya ictimaiyyətinə həqiqəti çatdırmaq zərurəti duyuldu və bu istiqamətdə bir çox mühüm və əhəmiyyətli işlərə imza atıldı. Bu işdə siyasətçilər, politoloqlar, tarixçilər, dilçilər və digərləri əlbir olaraq dövlətimiz, millətimiz, tariximiz haqqında olan həqiqətləri dünya üzrə məşhur KİV-də işıqlandırmaq missiyasını öhdəliklərinə götürdülər. 1918-1919-cu illərdə, sovet dövründə, 1990-cı illərdə baş verən hadisələr dəqiqlikə araşdırılmağa başladı. Tədqiqatların nəticələri müzakirə olundu, xalqın ixtiyarına verildi.

Qeyd etməliyik ki, illər boyu baş verən siyasi-tarixi proseslər zamanı görkəmli mütəfəkkirlərimizlə, dilimizlə yanaşı toponimlərimiz də repressiya olunmuşdur.

Yer adlarının dəyişməsi prosesi sovet dövründə intensiv olaraq həyata keçirilirdi. Məlumdur ki, bu sovet siyasətinin bir hissəsi idi (Yeykənd (İsmayıllı r.) – Qırmızı Oktyabr – Yenikənd, Babək r.da – Sovetabad, Gədəbəy r.da – Şurakənd, Çobankənd i.ə.v.-də - Şuraabad, Vladimirovka, Pakrovka, Novavasilyevka və s.).

Azərbaycan ərazisində müxtəlif azsaylı xalqlar yaşadığı üçün bəzi toponim və oykonimlərin yaranmasında bu xalqların milli dili (talış, ləzgi və s.) istifadə olunmuşdur.

ƏSAS HİSSƏ

Doğrudur, dilin leksik qatı daim inkişaf edir və yenilənir. Biz bunu qloballaşma ilə, elm və texnikanın inkişafı ilə əlaqələndiririk. Eyni zamanda sözlərdə müəyyən fonetik

dəyişikliklərin olması da təbii prosesdir. Bunu oykonimlərdə və digər onomastik vahidlərdə də müşahidə etmək mümkündür: Alılar (Cəlilabad r.) – Alar, Avuş (Şərur r.) – Havuş, Fərzəli (Cəlilabad r.) – Fərzili, Gültəpə (Babək r.) – Kültəpə, Kirnə (Culfa r.) – Kırna, Qarqulu (Cəlilabad r.) – Qarğılı, Mirzəyandigah (Şamaxı r.) – Mərzəndiyə, Siliban (Zaqatala r.) – Zilban, Ustupu (Ordubad r.) – Üstüpü və s. Lakin nəzərə almaq lazımdır ki, bəzən təhriflər və dəyişmələr leksik vahidləri ilkin mənasından uzaqlaşdırır.

ARAŞDIRMA

Bəzi oykonimlərin etimologiyasına nəzər salaq:

1933-cü ildə Zaqatala rayonu, Danaçı inzibati ərazi vahidində (i.ə.v.) salınmış Abalı kəndinın əsl adı Abaəlioba olmuşdur. Yerli əhalinin fərziyyələrinə görə, Abaəli Dağıstanın Çaroda kəndindən gəlmiş şəxsin adı olmuşdur. "Oba" isə ərazi, icma mənasındadır. Tədqiqatçılar da fərqli fikirlər irəli sürürlər. Onların fikrincə, türk dillərində, o cümlədən Azərbaycan dilinin dialekt və şivələrində aba "ata, baba, əmi, ana, xala, böyük bacı" mənalarında istifadə olunur. Oykonimin Dədəli, Babalı və s. etnotoponimlərinin omonimi kimi qəbul edilməsi qənaətindədirlər. Qeyd etmək lazımdır ki, bu oykonim sonrakı illərdə bir neçə dəfə dəyişdirilmişdir. 1979-cu ildə Abasalı, 1986-cı ildə Abaslı və son olaraq 2004-cü ildə Abaəli variantında rəsmi şəkildə qeydə alınmışdır (1,səh.7).

Qızıl Qışlaq kimi rəsmiləşdirilmiş Şahbuz rayonu ərazisində yerləşən bu kəndin əvvəlki adı Aşağı Remeşin (Rəməşin) olmuşdur. 1654-cü ilə aid sənədlərdə Xurəmeşin (hurilər, gözəl qadınlar yaşayan yer), 1727-ci ildə Hurçeşin, XIX əsrdə Huremeşin kimi qeydə alınmışdır. Azərbaycan xalq danışıq dilində toponimik termin kimi rəməl irəmə "kiçik, alçaq təpə, kələ-kötür yer" mənalarında işlənməkdədir. Bu baxımdan Remeşin sözünü "düzənliyə çıxan alçaq təpə üzərində yerləşən yer, kələ-kötür yer, kənd" kimi də izah etmək olar. 2003-cü ildən kəndin adı Qızıl Qışlaq kimi rəsmiləşdirilmişdir (1,59). Bu ərazi vahidində yerləşən Yuxarı Remeşin kəndinin adı isə dəyişdirilərək Güney Qışlaq kimi rəsmiləşdirilmişdir.

Şahbuz rayonu ərazisində digər bir oykonimin adına nəzər salaq. Gecəzur kəndi Gömür i.ə.v.-də yerləşir. Tədqiqatçıların nəzərinə görə, kəndin adı gecə (qaranlıq) və fars dilindəki zur (dərə) sözlərindən düzəlib, "qaranlıq dərə" mənasındadır. 2003-cü ildən kəndin adı Ağbulaq kimi rəsmiləşdirilmişdir (1,195).

Lənkəran ovalığında (Cəlilabad r.) yerləşən 2001-ci ildən Göytəpə adlanan kəndin sakinləri Rusiyanın yeritdiyi siyasətin nəticəsi olaraq, 1840-cı ildə buradan qovulmuş, Saratov və Orenburq quberniyalarından koçürülmüş rus ailələri kənddə məskunlaşdırılmışdır. Gələn ruslar kəndə Prişib adını vermişdilər. Hal-hazırda kənd ərazidəki eyni adlı dağın adını daşıyır (1,211).

Şərur rayonunun Şəhriyar i.ə.v.-də yerləşən Kürkənd kəndi düzənlik ərazidədir. Oykonim əvvəllər Kürdkənd adlanırmış. Kürd və kənd sözlərinin birləşməsindən yaranmışdır. "Kürdlərin kəndi" mənasındadır. 1933-cü ildə dəyişdirilərək Kürtkənd variantında, 2003-cü ildən isə Kürkənd kimi rəsmiləşdirilmişdir (1, 296).

Ucar rayonu, Şirvan düzündə yerləşən Qarabəyli kəndinin əsl adı Gəraybəylidir. Bu ad təhrif olunmuş və Qarabəyli şəklində qeydə alınmışdır. Bu yaşayış yerində Gəray bəy adlı şəxsə mənsub ailələr məskunlaşdığı üçün onun adı ilə adlandırılmışdır. 2001-ci ildən kəndin adı Gəraybəyli kimi rəsmiləşdirilmişdir (2,19).

Qırmızı Oktyabr kəndi İsmayıllı rayonu ərazisində yerləşir. Əvvəlki adı Yeykənd olmuşdur. Yaşayış yeri Oktyabr inqilabının şərəfinə belə adlandırılmışdır. 2001-ci ildə adı dəyişdirilmiş və Yenikənd kimi rəsmiləşdirilmişdir.

Yevlax rayonu ərazisində yerləşən Marziki kəndi düzənlikdədir. Yerli dialektlə Marzığı kimi tələffüz olunur. Tədqiqatçıların fikrinə görə oykonim öz adını fars dilindəki mərzək "bataqlıq" sözündən götürmüşdür. –i isə şəkilçidir. Kənd X əsrin əvvəllərində Şəki-Zaqatala zonasında yaşayan bir qrup qaraqoyunlu ailəsinin Marziki adlı köhnə kəndin yerində məskunlaşması nəticəsində yaranmışdır. 2002-ci ildən kəndin adı Marzılı kimi rəsmiləşdirilmişdir (2, 96).

Nəftəluq – Cəlilabad r.-nun Muğan i.ə.v.-də yerləşən kənddir. Lənkəran ovalığında yerləşən yaşayış məntəqəsi XIX əsrdə müxtəlif yerlərdən gəlmiş ailələrin Nəftəluq adlanan yerdə məskunlaşması nəticəsində yaranmışdır. Yerli əhalinin məlumatına görə, keçmişdə tuluqlara doldurulmuş neft dəvələrlə gətirilib burada satılırdı. Bu fikrə əsaslanan tədqiqatçılar oykonimin neft və tuluq sözlərindən ibarət olduğunu bildirirlər. Başqa bir fikrə görə isə, oykonim neft və məkan bildirən –luq şəkilçisindən ibarət olub, "neftli yer" mənasındadır. Kəndin adı 2001-ci ildən dəyişdirilmişdir. Hal-hazırda Söyüdlü (söyüd ağacları çox olan yer mənasında) adlanmaqdadır (2,132).

Oytala – (Zaqatala r.) oykonimi tərkibindəki "oy" komponenti bir çox türkdilli xalqların toponimiyasında "alçaq yer", "çuxur" və s. mənalarda işlənir. Yerli məlumata görə kəndin əsl adı tələffüzdə işləndiyi kimi Heytala (səsli, əks-sədalı tala) olmuşdur. 2004-cü ildən Hüytala kimi rəsmiləşdirilmişdir.

Siliban Zaqatala rayonunda dağətəyi ərazidədir. Yaşayış məntəqəsi Dağıstanın Qaytaq rayonundan köçüb gəlmiş ailələrin məskunlaşması nəticəsində yaranmışdır. Tədqiqatçılar bu oykonimi avarların ulu əcdadı hesab olunan silb/ silv tayfasının adı ilə bağlayırlar. Silblər Qafqaz albaniyasının şimalında yaşamışlar. Əvvəllər Dağıstan ərazisində avarların icmasına daxil olan əhalinin bir hissəsi də silv adlanırdı. Yaşayış yerinin adı 2001-ci ildən Zilban kimi rəsmiləşdirilmişdir.

Quba rayonu ərazisində yerləşən Vladimirovka kəndinin keçmiş adı Küsnət olmuşdur. 1891-ci ildə Rusiyanın Vladimir vilayətindən köçürülmüş ruslar burada məskunlaşdıqdan sonra adı dəyişdirilmişdir. Küsnət kəndinin əhalisi isə köçərək Quba və Qəbələ rayonlarında eyni adlı kənd yaratmışlar. XIX əsrdə adı çəkilən vilayətdən köçürülən rusların bir hissəsi Sabirabad rayonunda keçmiş adı Qəhrəmanlı olan kənddə məskunlaşmışlar. Kənd uzun müddət Vladimirovka adlanmışdır. 2004-cü ildən dəyişdirilərək Nizami adı ilə rəsmiləşdirilmişdir.

NƏTİCƏ

Əlbəttə ki, biz burada adı dəyişdirilən, ya da təhrif olunan yalnız bir neçə oykonim haqqında məlumat verdik. Azərbaycan tarixi onun torpaqları qədər, aid olduğu xalqı qədər qədim və zəngindir. Bu tarix Vətənimizin hər qarışında, daşında, torpağında həkk olunmuşdur. Hər bir oykonim özündə bu ərazidə yaşamış xalqın sirrini, sözünü, nəfəsini saxlamaqdadır. Çünki hər bir yerin tarixi burada məskunlaşmış yerli camaatın tarixi ilə bir başa əlaqəli olur.

Nümunələrdən də görürük ki, oykonimlər xalqın daş yaddaşının təzahürüdür və bu mövzuda diqqətli olmaq borcumuzdur.

İstifadə olunmuş ədəbiyyatlar:

1. Azərbaycan toponimlərinin ensikllopedik lüğəti (I cild), Şərq-Qərb, Bakı, 2007. 299 səh.
2. Azərbaycan toponimlərinin ensikllopedik lüğəti (II cild), Şərq-Qərb, Bakı, 2007. 303 səh.
3. Qabıssanlı Şakir. Toponimlərin açılmayan sirləri, Bakı, Təknur, 2013.504 səh.

SİVAS KENT MERKEZİ VE YAKIN ÇEVRESİNDE JEOMORFOLOJİK BİRİMLER İLE ARAZİ KULLANIMI ARASINDAKİ İLİŞKİNİN İNCELENMESİ

INVESTIGATION OF THE RELATIONSHIP BETWEEN GEOMORPHOLOGICAL UNITS AND LAND USE IN SIVAS CITY CENTER AND ITS CLOSE SURROUNDINGS

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ÖZET
Doğal ortam özelliklerini yansıtan jeomorfolojik özellikler ile insan faaliyetleri arasında sıkı bir ilişki ve etkileşim bulunmaktadır. Jeomorfolojik özelliklere bağlı olarak beşeri faaliyetler gelişim göstermektedir. Nüfus artışı ve teknolojinin gelişmesine bağlı olarak insan faaliyetleri jeomorfolojik yapıda değişimlere neden olmakta, doğal ortam üzerinde arazi kullanım kapasitesini olumsuz olarak etkilemektedir. Son yıllarda jeomorfolojik yapının dinamik gelişimini dikkate almadan yapılan plansız beşeri faaliyetler ve yanlış arazi kullanımları doğal morfolojik unsurların değişmesi gibi birçok çevresel problemi de beraberinde getirmektedir. Bu çalışmanın amacı; Coğrafi Bilgi Sistemi (CBS) yardımıyla Sivas kent merkezi ve yakın çevresinde bulunan jeomorfolojik birimler ile arazi kullanımları arasındaki ilişkiyi ortaya koymaktır. Çalışma alanının jeomorfoloji haritası ilgili kurumdan temin edilmiş olup, çalışma alanın ait arazi kullanım haritası ise CORINE arazi örtüsü/kullanımı verileri kullanılarak elde edilmiştir. ArcGIS 10.8 yazılımı yardımıyla her iki harita da çalışma alanını kapsayacak şekilde analiz edilebilir formata dönüştürülerek jeomorfoloji ile arazi kullanımı arasındaki ilişkiler belirlenmiştir. Tarım alanlarının en çok görüldüğü jeomorfolojik birimler 0-10^{o} eğim değerlerine sahip eğimli alanlar (% 24.45) ve düzlük alanlar (% 15.06); yerleşim alanlarının en çok görüldüğü jeomorfolojik birimler 0-10^{o} eğim değerlerine sahip yamaç özelliğindeki eğimli alanlar (% 35.48) ve dağ kolu (% 13.43) ve orman alanlarının en çok görüldüğü jeomorfolojik birimler ise eğim (% 40.63) ve dağ kolu (% 19.37) olarak belirlenmiştir. Çalışmanın sonuçları genel olarak değerlendirildiğinde; Sivas kent merkezi yakınında bulunan Kızılırmak nehrinin bulunduğu havzanın taşkın sahası olması dikkate alındığında arazi kullanımlarının jeomorfolojik birimlerin kontrolünde şekillenmiş olduğu sonucuna varılabilmektedir.

Anahtar Kelimeler: Jeomorfoloji, Arazi Kullanımı, Coğrafi Bilgi Sistemi, Sivas.

ABSTRACT
There is a close relationship and interaction between geomorphological features reflecting natural environment features and human activities. Human activities develop depending on geomorphological features. Depending on the population growth and the development of

technology, human activities cause changes in the geomorphological structure and adversely affect the land use capacity on the natural environment. In recent years, unplanned human activities and wrong land uses without considering the dynamic development of the geomorphological structure bring along many environmental problems such as the change of natural morphological elements. The aim of this study is to reveal the relationship between geomorphological units and land uses in Sivas city center and its immediate surroundings with the help of Geographic Information System (GIS). The geomorphology map of the study area was obtained from the relevant institution, and the land use map of the study area was obtained using CORINE land cover/use data. With the help of ArcGIS 10.8 software, both maps were converted into an analyzable format covering the study area and the relationships between geomorphology and land use were determined. The geomorphological units with the most agricultural areas are sloping areas (24.45%) and flat areas (15.06%) with 0-10^{o} slope values; The geomorphological units where the settlement areas are most common are the sloped areas with 0-10^{o} slope values (35.48%) and the mountain branch (13.43%), and the most common geomorphological units where the forest areas are seen are the slope (40.63%) and the mountain branch (19.37%) determined. When the results of the study are evaluated in general; considering that the basin where Kızılırmak river is located near Sivas city center is a floodplain, it can be concluded that land uses were shaped under the control of geomorphological units.

Keywords: Geomorphology, Land Use, Geographic Information System, Sivas.

1. GİRİŞ

Artan dünya nüfusunun beslenme ihtiyaçlarının karşılanabilmesi için mevcut arazi varlığının daha verimli kullanılması ve daha fazla ürün elde edilmesi gerekmektedir. Bunun için arazi kullanım kabiliyetinin potansiyel özelliklerinin belirlenmesi ve arazi kullanım planlamasının yapılması gerekmektedir (Tekeş ve Cürebal, 2019). Jeomorfik araştırmalara dayalı olarak insan faaliyetleri için uygun arazi sağlamak için yerel yönetim otoritesi için arazi kullanım planlarına ihtiyaç duyulmaktadır. Jeomorfik birimler, ekili ve sulanan arazilerin genişlemesi, sanayileşme, kentleşme ve diğerleri dahil olmak üzere çeşitli insan faaliyetlerinden etkilendikleri için doğaları gereği dinamiktirler çünkü arazi kullanım planlaması için izleme ve haritalama ihtiyacı vardır (Jenson ve Domingue, 1988). Dünya yüzeyindeki yer şekillerinin haritalanması veya izlenmesi oldukça pahalıdır. Halihazırda, çoğu ülkede tüm arazi kullanım planlama süreçleri jeomorfolojik birimlere dayanmaktadır (Islam vd., 2014).

İnsanoğlunun doğal çevreden faydalanması, öncelikli olarak doğal coğrafya özelliklerine bağlı olmaktadır. Özellikle yer şekilleri ve iklim koşulları araziden yararlanmayı sınırlandıran en önemli faktörleri meydana getirmektedir. Araziden yararlanmayı etkileyen en önemli etkenlerden olan jeomorfolojik birim, iç ve dış kuvvetlerin etkisi ile meydana getirilmiş olan; yapısal, oluşum karakterleri ve biçim olarak farklılık gösteren her bir morfolojik üniteyi ifade etmektedir (Türkan, 2013). Şehirler, günün ihtiyaçlarına cevap vermek üzere alansal genişlemelere uğramaktadırlar. Yaşanan bu genişlemeler, şehrin morfolojisi üzerinde değişikliklere neden olduğu gibi yeni şekillerin de meydana gelmesine neden olmaktadır. Bu gibi olaylar, alandaki doğal dengelerin olumsuz etkilenmelerine ve bir takım jeomorfolojik problemlerin meydana gelmesine sebep olurlar (Turoğlu, 1998).

Doğal kaynakların düzensiz kullanılması; çevresel sorunları ve morfolojik unsurların neden olduğu birçok sorunu beraberinde getirmektedir (Taş, 2006). Doğal kaynakların bilinçsizce

kullanılması gibi antropojen kaynaklı zararları en aza indirebilmek için morfolojik birimlerle arazi kullanım arasındaki ilişkilerin dikkatli bir şekilde incelenerek araziden en iyi şekilde yararlanma yoluna gidilmelidir. Bu şekilde, doğal kaynaklar korunarak planlı ve sürdürülebilir yaşam alanları oluşturulabilmekte, mekândan en iyi şekilde yararlanma yoluna gidilebilmektedir. Arazinin potansiyeline göre araziden maksimum düzeyde fayda elde edebilmek ve olumsuz koşullardan kaynaklanabilecek problemlerin ortaya çıkmasını engellemek için jeomorfolojik birimlerle arazi kullanım şekilleri arasındaki ilişkiye büyük önem verilmesi gerekmektedir (Esen ve Avcı, 2018, Kurt ve Duman, 2016). İlk kuruluş yeri olarak yamaçlarda bulunan yerleşmeler, ova ve plato yüzeyleri gibi diğer jeomorfolojik birimler üzerine doğru genişlemektedirler. Bu tür şehirleşme hareketleri, verimli tarım arazilerinin kaybedilmesi, doğal kaynakların aşırı kullanılması ve kirletilmesi gibi pek çok olumsuz çevresel etkilere neden olmaktadır. Bu kapsamda yerleşmelerin kuruluş yerlerinin ve gelişim alanlarının planlanmasında jeomorfolojik özelliklerin dikkate alınması bir gerekliliktir (Cürebal vd., 2008).

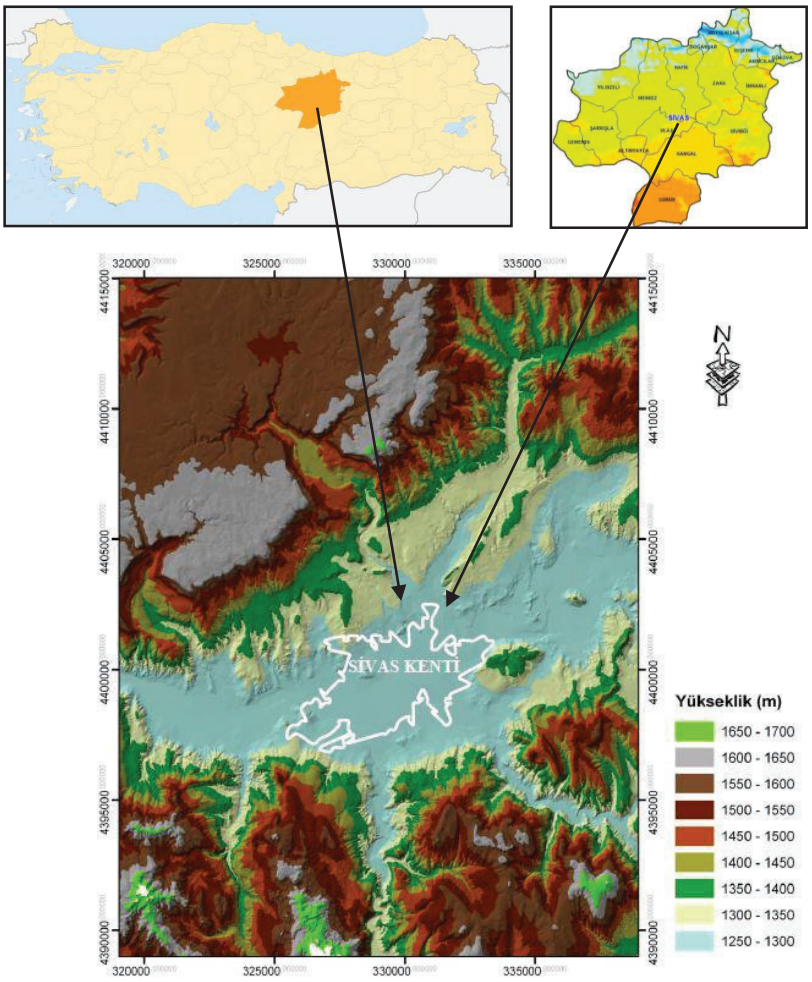
Birçok araştırmacı (Fialho vd., 1999; Cheng vd., 2007; Cürebal vd., 2008; Ege, 2008; Uzun, 2015; Kurt ve Duman, 2016; Quesada-Román vd., 2021) jeomorfolojik birimler arazi kullanım şekilleri arasındaki ikişkiyi ortaya koymuşlardır. Araştırmacılara göre; jeomorfolojik birimler arazi kullanımlarının şekillenmesinde belirleyici olmuştur.

Bu çalışmada; Coğrafi Bilgi Sistemi (CBS) yardımıyla Sivas kent merkezi ve yakın çevresinde bulunan jeomorfolojik birimler ile arazi kullanımları arasındaki ilişkiler ortaya konulmuştur. Çalışmada; Sivas kent merkezi ve yakın çevresini kapsayan 2018 yılına ait CORINE arazi örtüsü/kullanımı verilerinden ve sayısal jeomorfoloji verilerinden yararlanılmıştır.

2. MATERYAL VE YÖNTEM

Sivas ili, İç Anadolu Bölgesi'nin Yukarı Kızılırmak Bölgesi'nde yer almaktadır. 36° ve 39° doğu boylamları ile 38° ve 41° kuzey enlemleri arasında yer alan il, 28.488 km^2'lik yüzölçümü ile Konya'dan sonra Türkiye'nin ikinci büyük ilidir.

Çalışma alanı, 323350-339965-4393015-4413494 UTM koordinatlarında yer alan Sivas kent merkezi ve yakın çevresini kapsamakta ve yaklaşık olarak 345 km^2'lik bir alan kaplamaktadır (Şekil 1).



Şekil 1. Çalışma alanı yer buldur haritası ve çalışma alanı yükselti haritası

Çalışmanın ana materyalini, çalışma alanını kapsayan 2018 yılına ait CORINE arazi örtüsü/kullanımı verileri ve jeomorfoloji haritası oluşturmuştur. Çalışma alanını kapsayan 2018 yılına ait arazi kullanımı verileri, Avrupa Birliği tarafından koordine edilen Çevre Bilgileri Koordinasyonu (Coordination of Information on the Environment, CORINE) programı (https://land.copernicus.eu/pan-european/corine-land-cover) kapsamında elde edilmiştir. Çalışma kapsamında kullanılmış olan jeomorfoloji haritası ise sayısal olarak Sivas Cumhuriyet Üniversitesi Eğitim Fakültesi Coğrafya Eğitimi Anabilim Dalı'ndan temin edilmiştir.

Bu çalışmada uygulanan yöntemin temeli; çalışma alanındaki jeomorfoloji haritasından elde edilmiş olan jeomorfolojik birimler ile CORINE veri tabanından elde edilmiş olan çalışma alanındaki arazi kullanımları arasındaki ilişkinin ortaya konulmasıdır. Çalışma alanı sınırına göre jeomorfolojik birimler haritası ile arazi kullanımı haritasının elde edilmesi işlemi ArcGIS 10.8 yazılımı yardımıyla gerçekleştirilmiştir. Jeomorfolojik birimler ile arazi kullanımları arasındaki ilişkinin belirlenmesi işlemi ise ArcGIS 10.8 yazılımının Spatial Analyst (Mekânsal Analiz) eklentisinde bulunan Zonal (Tabulate Area) aracı yardımıyla gerçekleştirilmiştir.

2.1. CBS Tabanlı Jeomorfolojik Haritalama

Jeomorfolojik haritalar, yeryüzü şekillerinin yanı sıra yeraltını da gösteren bir peyzajın grafik envanterleri olarak kabul edilebilir. Peyzaj ve yer şekillerinin haritaları, eskiden beri yapılmış olan jeomorfolojik araştırmalardan beri Dünya yüzey özelliklerini analiz etmek ve görselleştirmek için temel yöntemler olmuştur. Coğrafi Bilgi Sistemi (CBS) kullanımının yaygınlaşması ve genişletilmiş grafik yetenekleri ile hava ve uydu görüntüleri ve sayısal yükseklik modelleri (SYM) gibi yüksek çözünürlüklü uzaktan algılama verilerinin mevcudiyeti sayesinde, jeomorfolojik haritalama yöntemi yakın zamanda teknolojik gelişmeler ışığında üretilmeye başlanmıştır. Jeomorfolojik haritalar, arazi yönetimi ve jeomorfolojik ve jeolojik risk yönetimi için bir ön araç olarak hareket edebilir ve ayrıca peyzaj ekolojisi, ormancılık veya toprak bilimi gibi diğer uygulamalı çevre araştırma sektörleri için temel veriler sağlayabilir (Paron ve Claessens, 2011).

2.2. CORINE Arazi Örtüsü/Kullanımı Haritalaması

CORINE arazi örtüsü/kullanımı sınıflandırması, Avrupa Birliği (AB) ülkelerinin çeşitli arazi örtülerini içerecek şekilde tasarlanmıştır. CORINE arazi örtüsü/kullanımı sınıflandırması, tüm Avrupa için standart olan ve hiyerarşik olarak üç seviyede düzenlenmiş 44 sınıflık bir arazi örtüsünü tanımlayan bir sınıflandırmadır. Birinci seviye, beş sınıflı ana kategorilere (yapay alanlar, tarım arazileri, ormanlar ve yarı doğal alanlar, sulak alanlar, su yüzeyleri) karşılık gelmektedir. İkinci düzey (15 sınıf), fiziksel ve fizyonomik varlıkları kapsayan ve daha yüksek düzeyde ayrıntı içeren arazi örtülerine (kentsel alanlar, ormanlar, göller, vb.) karşılık gelmektedir. 3. düzey ise 44 sınıftan oluşmaktadır (Willems vd., 2000; Yılmaz, 2010).

3. BULGULAR

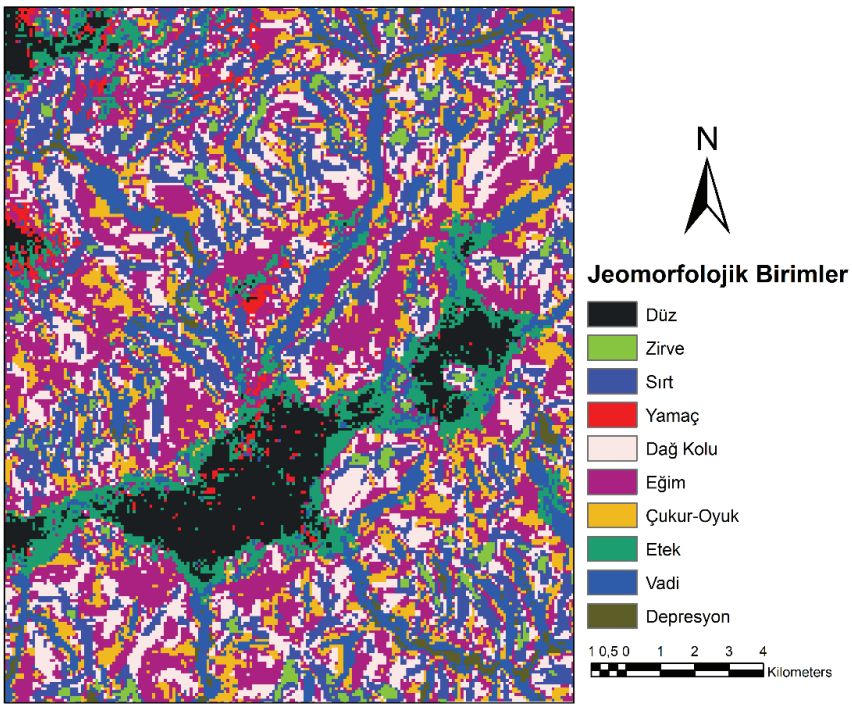
3.1. Çalışma Alanının Jeomorfolojik Özellikleri

Sivas ili genel olarak tek dağ veya sıradağlar arasındaki vadileri, batık ovaları ve yaylaları içeren bir plato şeklindedir. Sivas şehri geniş ve derin bir havzanın orta kesiminde yer alır. Bu havza Yukarı Kızılırmak vadisinin üzerinde yer alan havzalardan biri olup, genişliği taban kısmında 40-50, çevresindeki dağlar arasında da 100-150 km kadardır. Kızılırmak, yer yer genişleyip daralan alüvyal düzlükler üzerinden, doğudan batıya doğru akar, Sivas'ın batısından itibaren güneybatıya doğru yönelir. Alüvyal dolgu, Sivas'ta 1285 m (Sivas'ın bulunduğu yükselti), batı kesimlerde ise 1200-1250 m civarında bir yükselti gösterir. Taban kesimlerinde alüvyonlu düzlükler bulunan genç vadilere hâkim platolar, havza çevrelerine doğru çıkıldıkça 1500-1600 m yükseltilere ulaşır, daha yükseklerde dağlık alanlara intikal eder (Yalçınlar, 1997).

Sivas ilinin fiziki coğrafyasının belirlenmesinde çökelme, tektonik hareketler, aşınma ve hidrografik özellikler etkili olmuştur. Çalışma alanında yer alan Kızılırmak havzasında eriyebilen kayaçlar olarak tanımlanan jips ve anhidritli seriler üzerinde akış gösteren Kızılırmak ve kolları yüzey aşınımına yol açmış; dolin, uvala ve polye gibi karstik yer şekillerinin, aşınım yüzeyleri ve tepelerin oluşmasına neden olarak çalışma alanının esas jeomorfolojisini oluşturmuştur. Jipsli serilerin bulunduğu çalışma alanında aşınım süreçlerine bağlı olarak Kızılırmak (Şekil 3) ve kolları tarafından taşınan birimler havzanın üzerinde genişleyip daralan alüvyon düzlüklerini oluşturmuştur. Bu düzlükler aynı zamanda akarsu taşkın sahalarınına sebebiyet vermiştir. Sivas kent merkezinin kuzeyinde yer alan Meraküm platosu, tabakalı yapısıyla belirgin olup Kızılırmak tarafından derin vadilere ayrılmıştır. Platonun üst kısmında yatay durumdaki sekiye benzeyen kireçtaşı tabakaları aşınarak sert tabakalar şeklinde yüzeye çıkmıştır. Bütün bu morfolojiyi şekillendiren Kızılırmak ve kolları, Sivas şehrinin kuruluşunda etkili olmuştur. Deniz seviyesinden 1285 metre yükseltide yer alan Sivas şehri, Meraküm platosunun yamaçlarında ve

Kızılırmak akarsuyunun oluşturduğu geniş bir havzanın ortasında kurulmuştur (Şekil 1). Şehrin gelişim yönlerini bu akarsuyun kolları olan Tavra Deresi, Mısmıl ve Murdar ırmakları belirlemiştir. Sivas ilinin arazi özellikleri benzersiz bir morfolojiyi ön plana çıkarır. İlin jeolojik ve jeomorfolojik olarak geçirdiği süreçler, tektonik hareketler, hidrografya ve toprağın birbiriyle yakından ilişkili olduğunu göstermektedir. İl yüzölçümünün büyük olması sebebiyle dağlık kesimlerden ovalara, platolara ve aşınım yüzeylerinden vadilere kadar çok sayıda jeomorfolojik çeşitlilik görülebilir (Sivas Atlası, 2020).

Çalışmada kullanılmış olan jeomorfoloji haritasına (Şekil 2) göre; çalışma alanında 10 adet jeomorfolojik birim bulunmaktadır. Çalışma alanında en fazla dağılıma sahip jeomorfolojik birimler "eğim (% 26,48)", "dağ kolu (% 15,11) ve "vadi (% 14,22)"dir. Çalışma alanında en düşük dağılıma sahip jeomorfolojik birimler ise "zirve (% 2,41)" ve "depresyon (% 1,31)"dur. Sivas kent merkezinin bir kısmının da yer aldığı düzlük alanlar (% 7,24) çalışma alanının orta ve kuzey-batı kısımlarında yer almıştır. Genel olarak jeomorfolojik birimlerin çoğu, çalışma alanında homojen dağılım göstermiştir. Genel bir görünüm olarak, kent merkezinden uzaklaştıkça yükselti artışını gösteren "zirve" ve "dağ kolu" birimleri artış göstermekte ve Sivas kentinin kurulmuş olduğu Kızılırmak yatağında yer alan alüvyon düzlükleri yüksek dağlık alanlar tarafından çevrelenmektedir. Bu şekliyle merkezde alüvyon düzlükleri, en dışta dağlık alanlar ve her iki saha arasında ise plato alanları uzanmaktadır. Çalışma alanında Kızılırmak ve yan kollarına ait vadiler dışında dağlık kesimlerden ova tabanına doğru uzanan çok sayıda vadi bulunmaktadır (Şekil 2, Tablo 1).



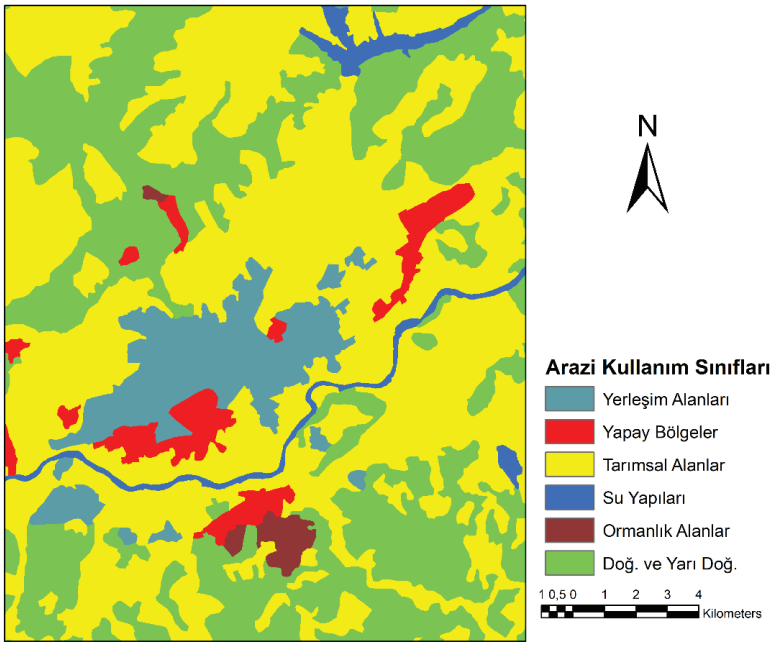
Şekil 2. Çalışma alanı jeomorfoloji haritası

Tablo 1. Çalışma alanında jeomorfolojik birimlerin kapladığı alanlar

Jeomorfolojik Birimler	Kapladığı Alan	
	km^2	%
Düz	24,98	7,24
Zirve	8,31	2,41
Sırt	47,07	13,64
Yamaç	4,41	1,28
Dağ Kolu	52,13	15,11
Eğim	91,35	26,48
Çukur-Oyuk	38,79	11,24
Etek	24,18	7,01
Vadi	49,05	14,22
Depresyon	4,51	1,31
Toplam	**345,03**	**100**

3.2. Çalışma Alanının Arazi Kullanımı Özellikleri

Bu çalışmada; CORINE arazi örtüsü/kullanımı sınıfları kapsamında çalışma alanının 2018 yıllarına ait arazi kullanımı sınıfları 6 sınıflı (doğal ve yarı doğal alanlar, ormanlık alanlar, su yapıları, tarımsal alanlar, yapay alanlar ve yerleşim alanları) olacak şekilde düzenlenmiştir. Bu sınıflandırmada endüstri-ticaret-ulaşım alanları, maden ocağı-boşaltım-inşaat alanları ve tarımsal olmayan yeşil alanlar "yapay alanlar" kapsamında; maki ve otsu bitkiler, bitki örtüsü ile kaplı olmayan veya az miktarda bitki örtüsü ile kaplı açık alanlar (çıplak kayalıklar, seyrek bitki alanları vs.) "doğal alanlar ve yarı doğal alanlar" kapsamında; nehir ve baraj gibi göl alanları ise "su yapıları" kapsamında değerlendirmeye alınmıştır. Çalışma alanının 2018 yılındaki arazi kullanımı sınıflarına ilişkin Şekil 3 ve Tablo 2 incelendiğinde; çalışma alanında en fazla alan kaplayan arazi kullanım sınıfının tarım alanları (% 52,80) ile doğal-yarı doğal alanlar (% 32,25) olduğu görülmüştür. Çalışma alanında en düşük dağılıma sahip arazi kullanım sınıfının ise ormanlık alanlar (% 0,91) olduğu belirlenmiştir (Şekil 3, Tablo 2).



Şekil 3. Çalışma alanı arazi kullanımı haritası

Tablo 2. Çalışma alanında arazi kullanımlarının kapladığı alanlar

Arazi Kullanım Sınıfları	Kapladığı Alan	
	km²	%
Doğal ve Yarı Doğal Alanlar	111,28	32,25
Ormanlık Alanlar	3,15	0,91
Su Yapıları	8,11	2,35
Tarımsal Alanlar	182,17	52,80
Yapay Bölgeler	12,70	3,68
Yerleşim Alanları	27,62	8,01
Toplam	**345,03**	**100,00**

3.3. Jeomorfoloji ile Arazi Kullanımı Arasındaki İlişkinin Değerlendirilmesi

Çalışma alanında jeomorfolojik birimler arazi kullanımlarının şekillenmesinde önemli bir rol oynamıştır. Çalışma alanı genel olarak tarım alanları ve doğal-yarı doğal alanlar açısından geniş alansal dağılıma sahiptir. Tarım alanlarının en çok görüldüğü jeomorfolojik birimler 0-10^o eğim değerlerine sahip (çalışma alanının eğim haritasına göre) "eğim (% 24.45)" ve "düz (% 15.06)" jeomorfolojik birimleri; yerleşim alanlarının en çok görüldüğü jeomorfolojik birimler 0-10^o eğim değerlerine sahip (çalışma alanının eğim haritasına göre) yamaç özelliğindeki "eğim (% 35.48)", "dağ kolu (% 13.43)" ve "düz (% 8,40)" jeomorfolojik birimleri, orman alanlarının en çok görüldüğü jeomorfolojik birimler ise 10-15^o eğim değerlerine sahip "eğim (% 40.63)" birimi ve "dağ kolu (% 19.37)" olarak belirlenmiştir. Doğal ve yarı doğal alanlar en fazla "eğim (% 28,95)" ve "dağ kolu (% 21,12)" birimlerinde dağılım göstermiştir. Maki ve otsu bitkiler, bitki örtüsü ile kaplı olmayan veya az miktarda bitki örtüsü ile kaplı açık alanlar (çıplak kayalıklar, seyrek bitki alanları vs.) "doğal alanlar ve yarı doğal alanlar" kapsamında ele alınmış olup bu alanların yükseltisi fazla, yamaç eğimleri de yüksektir. Bundan dolayı bu alanlar mera-çayır ve çıplak-kayalık alanlar olarak görülmektedir. Su yapıları en fazla "vadi (% 33,42)" ve "düz (% 26,14)" birimlerinde dağılım göstermiştir. Yapay alanlar kapsamında değerlendirilmiş olan "endüstri-ticaret-ulaşım alanları, maden ocağı-boşaltım-inşaat alanları ve tarımsal olmayan yeşil alanlar" ise "etek (% 28,74)", eğim "(% 21,34)" ve "düz (% 18,35)" ile ifade edilmiş olan jeomorfolojik birimlerde dağılım göstermiştir (Tablo 3).

Tablo 3. Çalışma alanında jeomorfolojik birimler ile arazi kullanımlarının kapladığı alanlar arasındaki ilişki

Arazi Kullanım Sınıfları	Jeomorfolojik Birimler																			
	Düz		Zirve		Sırt		Yamaç		Dağ Kolu		Eğim		Çukur-Oyuk		Etek		Vadi		Depresyon	
	km²	%	km²	%	km²	%	km²	%	km²	%	km²	%	km²	%	km²	%	km²	%	km²	%
Doğal ve Yarı Doğal Alanlar	0,54	0,49	3,16	2,84	19,75	17,75	0,43	0,39	23,50	21,12	32,22	28,95	14,15	12,72	1,49	1,34	14,35	12,90	1,40	1,26
Ormanlık Alanlar	0,00	0,00	0,00	0,00	0,48	15,24	0,00	0,00	0,61	19,37	1,28	40,63	0,44	13,97	0,00	0,00	0,30	9,52	0,00	0,00
Su Yapıları	2,12	26,14	0,00	0,00	0,18	2,22	0,02	0,20	0,23	2,84	0,60	7,40	0,38	4,69	1,17	14,43	2,71	33,42	0,66	8,14
Tarımsal Alanlar	27,44	15,06	4,77	2,62	23,27	12,77	3,17	1,74	23,14	12,70	44,54	24,45	20,17	11,07	15,14	8,31	17,60	9,66	2,23	1,22
Yapay Bölgeler	2,33	18,35	0,03	0,23	0,32	2,52	0,27	2,13	0,84	6,61	2,71	21,34	0,74	5,83	3,65	28,74	1,65	12,99	0,11	0,87
Yerleşim Alanları	2,32	8,40	0,33	1,19	2,94	10,64	0,51	1,85	3,71	13,43	9,80	35,48	2,77	10,03	2,66	9,63	2,47	8,94	0,06	0,21

4. SONUÇLAR

Bu çalışmada; Sivas kenti ve yakın çevresindeki jeomorfolojik birimlerin arazi kullanımları üzerindeki etkisi ortaya konulmuştur. Çalışma sonuçları genel olarak değerlendirildiğinde; tarım alanlarının daha çok eğimli (0-10^o eğim değerlerine sahip) ve düz alanlarda; yerleşim alanlarının daha çok yamaç özelliğindeki eğimli (0-10^o eğim değerlerine sahip), dağ kolu ve düzlük alanlarda; orman alanlarının daha çok eğimli (10-15^o eğim değerlerine sahip) ve dağ kolu alanlarında; doğal ve yarı doğal alanların daha çok eğimli ve dağ kolu alanlarında; su yapılarının daha çok vadi ve düzlük alanlarda; yapay alanların ise daha çok dağ eteklerinde, eğimli ve düzlük alanlarda dağılım gösterdiği belirlenmiştir.

Çalışma alanında yer alan Kızılırmak ve kolları, eriyebilen kayaçlar üzerinde akış göstererek yüzey aşınıma sebebiyet vermiş, karstik yer şekillerinin ve tepelerin oluşumuna neden olmuştur. Çalışma alanında yer alan Kızılırmak havzası, çalışma alanındaki jeomorfolojik birimlerin şekillenmesinde önemli bir rol oynamıştır. Kızılırmak ve kolları tarafından taşınan birimler çalışma alanındaki alüvyon düzlüklerini oluşturmuştur. Bu düzlükler aynı zamanda akarsu taşkın sahaları olarak da bilinmektedir. Deniz seviyesinden 1285 metre yükseltide yer alan Sivas kenti, kentin kuzeyinde bulunan Meraküm platosunun yamaçlarında ve Kızılırmak akarsuyunun oluşturduğu geniş bir havzanın ortasında kurulmuştur (Şekil 1). Sivas kent merkezinin kuzeyinde yer alan plato özelliğindeki jeomorfolojik birimler, Kızılırmak ve kolları tarafından derin vadilere ayrılmıştır. Çalışma alanında jeomorfolojik birimlerin oluşmasında, Sivas kentinin kuruluş yerinin ve gelişim yönlerinin belirlenmesinde Kızılırmak ve kolları etkin olmuştur. Sivas kentinin jeomorfolojik özelliklerine bağlı olarak Sivas kentinin kurulmuş olduğu alanın taşkın sahası olması sebebiyle bundan sonra yapılacak kentsel arazi kullanım plan ve projelerinin tamamında jeomorfolojik faktörlerin neden olduğu kısıtların dikkate alınması büyük önem taşımaktadır.

Sonuç olarak; Sivas kent merkezi yakınında bulunan Kızılırmak nehrinin bulunduğu havzanın taşkın sahası olması dikkate alındığında çalışma alanında bulunan arazi kullanımlarının jeomorfolojik birimlerin kontrolünde şekillenmiş olduğu sonucuna varılabilmektedir. Sivas kent merkezi ve yakın çevresindeki arazi kullanımlarının, çalışma alanında bulunan jeomorfolojik birimlerin kontrolü altında şekillendiği söylenebilmektedir. Bu çalışma; bundan sonra yapılacak olan arazi kullanım planlaması çalışmalarında bölgenin jeomorfolojik özelliklerinin dikkate alınması gerektiğini ortaya koyması ve bölgenin çevresel etkilerinin bölgesel ölçekte gelişime katkı sağlayabilmesi açısından kaynak bir çalışma niteliği taşımaktadır.

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ROLE OF ANESTHESIOLOGISTS - REANIMATORS IN PROVIDING MEDICAL CARE TO WOUNDED IN THE FRONT - LINE HOSPITAL

CƏBHƏYANI HOSPİTALDA YARALILARA TİBBİ YARDIM GÖSTƏRİLMƏSİNDƏ ANESTEZİOLOQ-REANİMATOLOQLARIN ROLU

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Keywords: anesthesiologists-reanimators, front-line hospital, medical care.

During the Second Karabakh War, anesthesiologists-reanimators (AR) participated at all stages of providing medical care to the wounded in the front-line hospital operating on the basis of the Fizuli Medical Diagnostic Center (director Shucurov Sh.B.). Examination and reception of the wounded by AR directly in ambulances allowed to accurately assess the severity of the general condition of the injured and, if necessary, immediately begin cardiopulmonary resuscitation (CPR).

At the triage stage in the emergency department, thanks to the skills and professionalism of the AR, in addition to punctures of the peripheral veins, catheterization of the central veins and tracheal intubation were performed, which created conditions for infusion therapy, for intravenous administration of cardiotonics and painkillers, for adequate ventilation of the lungs. Diagnostic procedures were performed under sedation and anesthesia under the supervision of the AR. The wounded, in need of stabilization of hemodynamic and homeostasis, were taken to the intensive care unit (İCU), where AR coped with this task with interest. If urgent surgical care was required, the wounded were taken directly to the operating room (OR) accompanied by AR, often with ongoing CPR and mechanical ventilation through an endotracheal tube. In the (OR), qualified AR were waiting for them, who knew how to perform selective and gentle anesthesia for all types of surgical intervention.

Thus, the selfless work, high professionalism and excellent skills of the AR, shown at all stages of providing medical care to the wounded in the front-line hospital, made it possible to increase the efficiency of this service, and thereby save more than one life of soldiers and officers.

Açar sözlər: anesteziolоq-reanimatolpoq, cəbhəyanı hospital, tibbi yardım.

Ənənəvi olaraq cəbhəyanı hospitallarda yaralılara göstərilən tibbi yardım zamanı cərrahlar aparıcı rol oynamışlar. Son illər yaralıların ümumi vəziyyətinin qiymətləndirilməsi, bir sıra təcili və təxirəsalınmaz prosedurların yerinə yetirilməsi, orqanizmin həyat üçün vacib funksiyalarının idarə olunması sahəsində anesteziologreanimatoloqların (AR) bilik və bacarıqlarının artması və peşəkarlığının yüksəlməsi bu stereotipin dəyişməsi üçün zəmin yaratmışdır.

Bu məqalənin hazırlanmasında **məqsədimiz** digər ixtisas sahiblərinin fədakar əməyinə kölgə salmadan cəbhəyanı hospitalda yaralılara tibbi yardımın göstərilməsində AR fəaliyyətinin qiymətləndirilməsindən, bu fəaliyyətin səmərəliliyinin və effektivliyinin araşdırılmasından ibarətdir.

AR xüsusi biliklərə, bacarıqlara və vərdişlərə malik olan, orqanizmin həyat üçün vacib funksiyalarının idarə olunması, bu funksiyalar zəiflədikdə və ya itirildikdə onların bərpası ilə məşğul olan mütəxəssis həkimdir. Orqanizmin həyat üçün vacib funksiyalarının idarə olunası və saxlanması üçün istifadə edilən bir sıra prosedurlar (periferik və mərkəzi venaların kateterizasiyası, traxeyanın intubasiyası, ağciyərlərin süni ventilyasiyası, ürəyin qapalı masajı və s.) bir qayda olaraq AR tərəfindən icra edilir.

Məqalənin hazırlanması o ağır və eyni zamanda coşqulu günlərdə toplanmış faktik materiallara və müşahidələrimizə əsaslanır.

İkinci Qarabağ Müharibəsi zamanı akad. M.A.Topubaşov adına ECM-nin anesteziologreanimatoloqlardan və müxtəlif ixtisaslı cərrahlardan ibarət həkim briqadası Fizuli rayon Müalicə Diaqnostika Mərkəzində fəaliyyətə başlayan cəbhəyanı hospitalda yaralılara tibbi yardımın göstərilməsinə cəlb edilmişdilər.

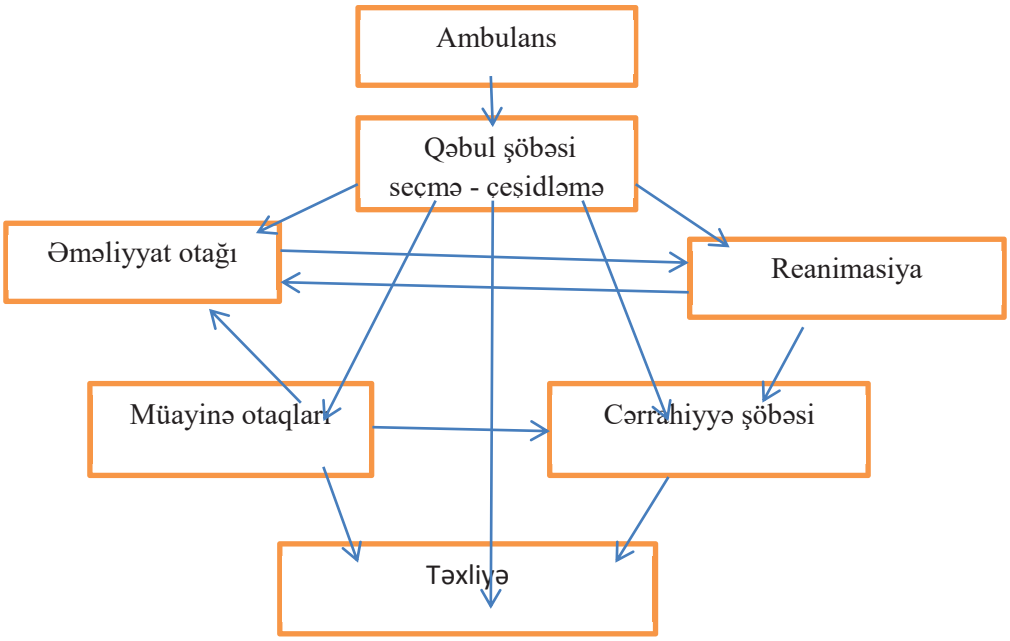
TƏBİB-in rəhbərliyi və Müalicə Diaqnostika Mərkəzinin direktoru eyni zamanda hospitalın rəisi vəzifəsini icra edən Şaiq Şükürovun göstərişiylə yaralılara göstərilən tibbi yardımın tam həcmdə qarşılanması və keyfiyyətinin yaxşılaşdırılması məqsədiylə bir sıra struktur dəyişiklikləri edilmiş və tibbi xidmətin bütün mərhələlərində AR iştirakı və aparıcı rolu təmin edilmişdi.

Füzuli rayon Müalicə Diaqnostika Mərkəzində aparılmış struktur dəyişiklikləri

Sıra N-si	Struktur göstəricisi	Sülh dövrü	Müharibə dövrü
1	Ümumi çarpayı sayı, ədəd	32	102
2	Reanimasiya çarpayı sayı, ədəd	6	15
3	Qəbul şöbəsində sargı stolu, ədəd	2	11
4	Əməliyyat stolu, ədəd	3	4

Cəbhəyanı hospitalda yaralılara göstərilən tibbi yardımın mərhələləri haqda təsəvvür əldə etmək üçün təqdim olunan sxemə nəzər salaq.

Cəbhəyanı hospitalda yaralılara göstərilən tibbi yardımın mərhələləri



Təqdim olunan sxemdən göründüyü kimi hospitalın şöbələri, başqa sözlə desək yaralılara göstərilən tibbi yardımın mərhələləri arasında qarşılıqlı əlaqə mövcud idi və AR bu mərhələlərin hər birində öz xidmətini göstərirdi.

44 günlük müharibə ərzində Füzuli Müalicə Diaqnostika Mərkəzində fəaliyyət göstərən cəbhəyanı hospitala 4725 əsgər və zabit qəbul edilmiş və bütün yaralılara ilkin tibbi yardım göstərilmişdir. Zədələnmənin ağırlıq dərəcəsindən, xarakterindən, lokalizasiyasından, həyat üçün vacib orqanların funksiyasının saxlanmasından asılı olaraq, yaralılar eyni zamanda seçilir, çeşidlənir, sonrakı mərhələlərdə yardım alması üçün istiqamətləndirilirdi. Maksimum 5-10 dəqiqə ərzində bütün yaralılara vazofiks vasitəsiylə venapunksiya edilməsi və infuzion terapiyanın başlanması təmin edilirdi. Döyüş meydanında qoyulmuş sargılar dəyişdirilir, çirkli paltarlar çıxarılır, yaralının bədəni müayinədən keçirilirdi. Həyat üçün təhlükə törətməyən, kəllə, döş və qarın boşluqlarına keçməyən yüngül yaraların birincili cərrahi işlənməsi qəbul şöbəsində icra edilirdi. Bu zaman AR tərəfindən qeyri-invaziv monitorinq, venadaxili ağrısızlaşdırma və sedasiya həyata keçirilirdi. Eyni zamanda yaralıların həyat funksiyalarının saxlanmasına yönəlmiş məsuliyyətli və xüsusi bacarıq tələb edən prosedurları da (traxeyanın intubasiyası, süni tənəffüsün aparılması, ürəyin qapalı masajı, mərkəzi veneaların kateterizasiyası və s.) AR icra edirdi. Bütün bunlarla yanaşı o, seçmə-çeşidləmə prosesini nəzarətdə saxlayır və yaxından iştirak edirdi. Belə vaxtlarda qəbul-seçmə-çeşidləmə şöbəsi arı pətəyinə oxşayırdı və bu işgüzar arı ailəsində Ana arı rolunu AR ifa edirdi. Hər şey onun nəzarəti altındaydı, bütün göstərişlər ondan gəlirdi, bütün qərarları o verirdi. Burada anesteziolog-reanimatoloq hər yerdəydi və hər işin öhdəsindən gəlirdi.

Yaralıların ambulansdan qəbul edilməsində reanimatoloqun bilavasitə iştirakı hər bir yaralının ümumi vəziyyətini düzgün qiymətləndirməyə, hipovolemik-travmatik-hemorragik şok mövcud olduğu hallarda onun dərəcəsini təyin etməyə və təxirəsalınmaz intensiv terapiya və reanimatoloji yardıma başlamağa imkan verirdi.

Bu zaman AR ürək fəaliyyətini və tənəffüsü bərpa etmək, hemodinamikanı stabilləşdirmək üçün və şok əleyhinə istifadə edilən dərman preparatlarını steril şprislərə doldurularaq xalatlarının döş cibində saxlayırdılar. Çünki, klinik ölüm və kritik ağır vəziyyətlərdə olan yaralılara yardım göstərilərkən sərf olunan vaxt dəqiqələrlə deyil saniyələrlə ölçülürdü.

Hələ ambulansdaykən ambu və maska vasitəsiylə yardımçı və süni tənəffüsün aparılması tənəffüs çatmazlığı olan onlarla yaralıya tətbiq edilmişdi. Tibbi yardımın bu

mərhələsində dəfələrlə tam həcmdə ürək-ağciyər reanimasiyası (CPR) başlanmış və fasiləsiz olaraq tibbi yardımın sonrakı mərhələlərində davam etdirilərək məntiqi sonluğa çatdırılmışdı.

Artıq qeyd etdiyimiz kimi, qəbul şöbəsi həm də seçmə-çeşidləmə məntəqəsi idi. Ümumi vəziyyətindən, hansı cərrahi müdaxiləyə ehtiyacı olmasından, yaranan xarakterindən, lokalizasiyasından və həyat üçün nə qədər təhlükəli olmasından asılı olaraq yaralılar çeşidlənir, qruplara ayrılır və aidiyyəti üzrə göndərilirdi. İlk növbədə təxirəsalınmaz cərrahi əməliyyata ehtiyacı olan yaralılar (I qrup – 465 nəfər) seçilir və əməliyyat blokuna göndərilirdi. Bu qrupa daxili orqanların yaralanması və həyat üçün təhlükəli daxili qanaxmaların davam etdiyi yaralılar, magistral arteriyaların zədələnməsi və ya sıxılması səbəbindən ətrafların kəskin işemiyası inkişaf etmiş yaralılar, baş beyin və ya onurga beyində yad cisimlərin ləngimiş olduğu və vaxt keçdikcə bu orqanların funksiyasının itirilməsi təhlükəsi olan yaralılar daxil edilirdilər.

Əməliyyat blokuna gətirilən yaralıları anesteziolog artıq gözləyirdi. Əməliyyatın xarakterindən, həcmindən icra ediləcəyi nahiyədən asılı olaraq qoruyucu ümumi və ya regionar anesteziya metodu seçilirdi. Əməliyyat bitdikdən sonra anesteziologun müşayəti ilə yaralı reanimasiya şöbəsinə gətirilir və reanimatoloqa təhvil verilirdi.

Çeşidləmə prosesində diqqət mərkəzində olan II qrup yaralılar (609 nəfər) həyat funksiyalarının zəifləməsi müşahidə edilən hərbçilər idi. Onlara ilkin tibbi yardım göstərildikdən, bir sıra hallarda traxeyanın intubasiyası icra edildikdən sonra reanimasiya şöbəsinə göndərilirdi. Burada reanimatoloqlar tərəfindən infuzion-transfuzion, ventilyasion, inotrop dəstək göstərilməklə və şok əleyhinə tədbirlər görülməklə yaralının vəziyyəti sabitləşdirilir və yalnız bundan sonra aidiyyəti üzrə istiqamətləndirilirdi.

Diaqnozun dəqiqləşdirilməsi (daxili qanaxmalar, sınıqlar, çıxıqlar, qəlpə, güllə və digər yad cisimlərin yerinin müəyyən edilməsi və s.) tələb olunan yaralılar (III qrup-2675 nəfər) rentgenradioloji müayinəyə yönəldilirdi. Bu müayinələrin aparılmasını asanlaşdırmaq və yaralının komfortunu təmin etmək üçün AR tərəfindən həyat funksiyalarına nəzarət edilir və şüurun saxlanması ilə sedasiya tətbiq edilirdi. Belə vəziyyətdə yaralılar həkimin göstərişlərini yerinə yetirir və eyni zamanda mənfi emosiyalara qarşı reaksiyaları zəifləmiş olur. Müayinələr bitdikdən və diaqnoz dəqiqləşdirildikdən sonra yaralılar aidiyyəti üzrə istiqamətləndirilirdilər.

İlkin yardım göstərildikdən sonra çeşidləmə prosesində yaralının vəziyyətinin stabil olduğu, təcili cərrahi əməliyyata və ya intensiv terapiyaya ehtiyac olmadığı aşkarlandıqda (IV qrup-480 nəfər) cərrahi şöbəyə yerləşdirilirdi. Bu yaralılar sonradan Müdafiə Nazirliyinin Hərbi Hospitalına və ya digər tibb müəssisələrinə təxliyə edilirdilər.

İlkin yardım göstərildikdən sonra vəziyyəti qənaətbəxş olan yaralılar (V qrup-496 nəfər) AR müayinəsindən (AT ölçülməsi, nəbzin sayılması, agciyərlərin auskultasiyası və s.) sonra seçmə-çeşidləmə məntəqəsindən birbaşa digər tibb müəssisələrinə təxliyə edilirdilər.

Füzuli Müalicə Diaqnostika Mərkəzində 44 günlük Vətən Müharibəsi zamanı hospitaldaxili ölüm 0,15% (7 nəfər) təşkil etmişdir ki, bu da çox kiçik rəqəmdir. Cəbhəyanı hospitalda həyatını itirən hərbçilər həyatla uzlaşmayan zədələr, IV dərəcə hipovolemik-travmatik-hemorragik şok və geriyə dönməyən homeostaz pozğunluqları ilə hospitala çatdırılmışdılar. O cümlədən ambulansda CPR başlanmış, qəbul şöbəsində traxeyanın intubasiyası və mərkəzi venanın kateterizasiyası CPR fonunda icra edilmiş, liftdə, dəhlizlərdə CPR davam etdirilərək əməliyyat otağına çatdırılmış yaralıya torakotomiya edilərək ürəyin açıq masajı icra edilsə də onun həyatını xilas etmək mümkün olmamışdı.

Beləliklə, Fizuli Müalicə Diaqnostika Mərkəzinin bazasında fəaliyyət göstərən cəbhəyanı hospitalda tibbi yardımın bütün mərhələlərində çalışmış AR-in fədakar əməyi, yüksək peşəkarlığı, mükəmməl vərdişləri və səyləri nəticəsində yaralılara göstərilən tibbi xidmətin səmərəliliyi və effektivliyi yüksəlmiş və onlarla zabit və əsgərin həytını xilas etmək mümkün olmuşdur.

Statistical Approximation Properties of New (p,q)-analogue of Balázs Szabados Operators

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Abstract

In this paper, we study statistical approximation properties of new (p,q)- analogue of the Balázs-Szabados operators by using the statistical notion of convergence.

Keywords: (p,q)- calculus, moments, Bernstein operators, Balázs-Szabados operators, (p,q)- Balázs-Szabados operators, statistical convergence.

INTRODUCTION

Bernstein type rational functions, $R_n(f;x)=\dfrac{1}{(1+a_n x)^n}\sum_{k=0}^{n} f\left(\dfrac{k}{b_n}\right)\binom{n}{k}(a_n x)^k \quad (n=1,\ 2,\ ...)$, were defined and studied by Balázs in 1975, (see [1]). In this definition, f is a real and single valued function defined on the interval $[0,\infty)$, a_n and b_n are real numbers which are selected suitably and are independent of x. Seven years later in 1982 Balázs and Szabados studied together and improved the estimate in [1] by choosing suitable a_n and b_n under some restrictions for $f(x)$, (see [2]).

In recent years, Hamal and Sabancigil ([3]), Doğru ([14]) and Özkan ([15]) studied q-generalizations of Balázs-Szabados operators. Approximation properties of the q-Balázs-Szabados complex operators are studied by Mahmudov in [5] and by Ispir and Özkan in [16].

Moreover, some other new generalizations of these operators are discovered with the fast rise of (p,q)-analysis. Recently, Mursaleen et al introduced and studied (p,q)-analogue of Bernstein operators, (p,q)-analogue of Bernstein-Stancu operators, Bernstein-Kantorovich operators based on (p,q)-calculus, (p,q)-Lorentz polynomials on a compact disc, Bleimann-Butzer-Hahn operators defined by (p,q)-integers and (p,q)-analogue of two parametric Stancu-Beta operators (see [17]-[23]). (p,q)-generalization of Szász-Mirakyan operators is studied by Acar (see [24]), Kantorovich modification of (p,q)-Bernstein operators is studied by Acar and Aral (see [25]). A generalization of q-Balázs-Szabados operators based on (p,q)-integers is studied by Özkan and Ispir in [26]. Hamal and Sabancigil introduce a new (p,q)-generalization of q-Balázs-Szabados operators as follows (see [4]),

$$R_{n,p,q}(f,x)=\frac{1}{p^{n(n-1)/2}}\sum_{k=0}^{n}\begin{bmatrix}n\\k\end{bmatrix}_{p,q}p^{k(k-1)/2}f\left(\frac{p^{n-k}[k]_{p,q}}{b_n}\right)\left(\frac{a_nx}{1+a_nx}\right)^k\prod_{j=0}^{n-k-1}\left(p^j-q^j\frac{a_nx}{1+a_nx}\right),$$

where $a_n=[n]_{p,q}^{\beta-1}$, $b_n=[n]_{p,q}^{\beta}$, $0<\beta\le\frac{2}{3}$, $n\in\mathbb{N}$, $x\ge 0$, f is a real-valued function defined on $[0,\infty)$.

In this paper, we study statistical approximation properties of new (p,q)-analogue of the Balázs-Szabados operators by using the definition of statistical convergence.

Before stating the main result for these operators, we give some notations and definitions of (p,q)-calculus. For any $p>0$, $q>0$ and non-negative integer n, the (p,q)-integer of the number n is defined as:

$$[n]_{p,q}=p^{n-1}+p^{n-2}q+p^{n-3}q^2+\ldots+pq^{n-2}+q^{n-1}=\begin{cases}\dfrac{p^n-q^n}{p-q} & if\ p\neq q\neq 1\\ np^{n-1} & if\ p=q\neq 1\\ [n]_q & if\ p=1\\ n & if\ p=q=1\end{cases},$$

the (p,q)-factorial is defined by

$$\left[n\right]_{p,q}!=\prod_{k=1}^{n}\left[k\right]_{p,q}\ ,\ n\geq 1\quad \text{and}\quad \left[0\right]_{p,q}!=1,$$

and $\left(p,q\right)$- binomial coefficient is defined by

$$\begin{bmatrix} n \\ k \end{bmatrix}_{p,q}=\frac{\left[n\right]_{p,q}!}{\left[k\right]_{p,q}!\left[n-k\right]_{p,q}!}\quad ,0\leq k\leq n.$$

The formula of $\left(p,q\right)$- binomial expansion is defined by

$$\begin{aligned}\left(ax+by\right)_{p,q}^{n}&=\sum_{k=0}^{n}p^{\frac{(n-k)(n-k-1)}{2}}q^{\frac{k(k-1)}{2}}a^{n-k}b^{k}x^{n-k}y^{k}\\&=\left(ax+by\right)\left(pax+qby\right)\left(p^{2}ax+q^{2}by\right)...\left(p^{n-1}ax+q^{n-1}by\right).\end{aligned}$$

From Fast [6] and Fridy [7] we have the following:

Suppose that $E\subseteq\mathbb{N}=\left\{1,\ 2,\ ...\right\}$ and $E_n=\left\{k\leq n:k\in E\right\}$. Then $\delta\left(E\right)=\lim_{n\to\infty}\frac{1}{n}\left|E_n\right|$ is called natural density of E provided that the limit exists. A sequence $x=\left(x_n\right)_{n\in N}$ is said to be statistically convergent to the number L if for every $\varepsilon>0,\ \delta\left\{k\in\mathbb{N}:\left|x_k-L\right|\geq\varepsilon\right\}=0$ and we write $st_A-\lim_{n\to\infty}x_n=L$. It is known that any convergent sequence is statistically convergent since all finite subsets of the natural numbers have density zero but not conversely.

As an example, consider the sequence $A=\left\{a_n,\ n=1,\ 2,\ 3,...\right\}$ whose terms are

$$a_n=\begin{cases}\sqrt{n} & \text{when } n=m^2,\ \forall m=1,\ 2,\ 3,... \\ 1 & \text{otherwise}\end{cases},$$

we can see that the sequence is divergent in ordinary sense, but it is statistically convergent to 1 since $\delta\left(E\right)=0$ where $E=\left\{m^2\ \text{for all}\ m=1,\ 2,\ 3,\ ...\right\}$.

Let $C_B\left[a,b\right]$ denote the space of all functions f which are continuous in every point of the interval $\left[a,b\right]$ and bounded on the entire positive real line, $\left|f\left(x\right)\right|\leq M_f,\forall x\in\left(0,\infty\right)$.

Definition 1 ([4]). Let $0<q<p\leq 1,$ we introduce a new $\left(p,q\right)$- analogue of Balázs-Szabados operators by

$$R_{n,p,q}(f,x)=\frac{1}{p^{n(n-1)/2}}\sum_{k=0}^{n}\begin{bmatrix}n\\k\end{bmatrix}_{p,q}p^{k(k-1)/2}f\left(\frac{p^{n-k}[k]_{p,q}}{b_n}\right)\left(\frac{a_nx}{1+a_nx}\right)^k\prod_{j=0}^{n-k-1}\left(p^j-q^j\frac{a_nx}{1+a_nx}\right),$$

where $a_n=[n]_{p,q}^{\beta-1}$, $b_n=[n]_{p,q}^{\beta}$, $0<\beta\le\frac{2}{3}$, $n\in\mathbb{N}$, $x\ge 0$, f is a real-valued function defined on $[0,\infty)$.

Lemma 1 ([4]). For all $n\in\mathbb{N}$, $x\in[0,\infty)$ and $0<q<p\le 1$, we have the following equalities:

$$R_{n,p,q}(1,x)=1,\quad R_{n,p,q}(t,x)=\frac{x}{1+a_nx},$$

$$R_{n,p,q}(t^2,x)=\frac{p^{n-1}}{a_nb_n}\left(\frac{a_nx}{1+a_nx}\right)+\frac{q[n-1]_{p,q}}{a_nb_n}\left(\frac{a_nx}{1+a_nx}\right)^2.$$

Lemma 2 ([4]). For all $n\in\mathbb{N}$, $x\in[0,\infty)$ and $0<q<p\le 1$, we have the following central moments:

$$R_{n,p,q}((t-x),x)=\frac{-a_nx^2}{1+a_nx}.$$

$$R_{n,p,q}((t-x)^2,x)=\frac{p^{n-1}}{b_n}\left(\frac{1}{a_nx+1}\right)x+\left\{\left(\frac{a_nx}{1+a_nx}\right)^2-\frac{p^{n-1}}{[n]_{p,q}}\frac{1}{(1+a_nx)^2}\right\}x^2.$$

In the following theorem, the Bohman-Korovkin type statistical approximation was proved by Gadjiev and Orhan.

Theorem 1 ([9]). Let $(L_n)_{n\in\mathbb{N}}$ be a sequence of positive linear operators acting from $C_B[a,b]$ to $B[a,b]$ that is, $L_n:C_B[a,b]\to B[a,b]$ satisfies the conditions that

$$st_A-\lim\|L_n(e_i)-e_i\|=0 \text{ with } e_i(t)=t^i \text{ and } \forall\ i=0,\ 1,\ 2. \qquad (1)$$

Then

$$st_A-\lim_n\|L_nf-f\|=0\quad,\forall f\in C_B([a,b]).$$

Now, let us consider $q=(q_n)_{n\in\mathbb{N}}$, $p=(q_n)_{n\in\mathbb{N}}$, such that

$$st_A-\lim_n q_n=1 \text{ and } st_A-\lim_n p_n=1. \qquad (2)$$

As an application of Theorem 1, we give the following main result for statistical convergence of the operators $R_{n,p,q}(f,x)$ to f.

Theorem 2. Let $q=(q_n)$, $p=(p_n)$, $0<q_n<p_n\leq 1$ be sequences satisfying (2). Then for each compact interval $[0,b]\subset[0,\infty)$,

$$st_A-\lim_n\left\|R_{n,p,q}(f,x)-f(x)\right\|=0\ ,\ \ \forall f\in C([0,b]).$$

Proof. According to Theorem 1, it is sufficient to show that it satisfies (1). By using Lemma 1, it is clear that

$$st_A-\lim_n\left\|R_{n,p_n,q_n}(e_0;x)-e_0\right\|=0\ ,\text{ since } R_{n,p_n,q_n}(e_0;x)=1. \tag{3}$$

Again by Lemma 1, we have

$$\left|R_{n,p_n,q_n}(e_1;x)-e_1\right|=\left|\frac{x}{1+a_{n,p_n,q_n}x}-x\right|=\frac{a_{n,p_n,q_n}x^2}{1+a_nx}.$$

By taking the maximum of both sides of the last equality on $[0,b]$ with $0<b<\dfrac{1}{a_{n,q_n}}$, we obtain

$$\left|R_{n,p_n,q_n}(e_1;x)-e_1\right|\leq\frac{a_{n,p_n,q_n}b^2}{\left(1+a_{n,p_n,q_n}b\right)}.$$

By using consideration (2), we get

$$\left\|R_{n,p_n,q_n}(e_1;x)-e_1\right\|<\varepsilon.$$

Now, for $\varepsilon>0$, we define the sets

$$A:=\left\{n\in\mathbb{N}:\left\|R_{n,p_n,q_n}(e_1;.)-e_1\right\|\geq\varepsilon\right\}, \tag{4}$$

$$A_1=\left\{n\in\mathbb{N}:\frac{a_{n,p_n,q_n}b^2}{\left(1+a_{n,p_n,q_n}b\right)}\geq\varepsilon\right\},$$

thus from (4), we can see that $A\subseteq A_1$ and we get

$$\delta\left\{n\in\mathbb{N}:\left\|R_{n,p_n,q_n}(e_1;.)-e_1\right\|\geq\varepsilon\right\}\leq\delta\left\{n\in\mathbb{N}:\frac{a_{n,p_n,q_n}b^2}{\left(1+a_{n,p_n,q_n}b\right)}\geq\varepsilon\right\}. \tag{5}$$

By using consideration (2), it is easy to see that

$$st_A-\lim_n a_{n,p_n,q_n}=st_A-\lim_n\frac{a_{n,p_n,q_n}b^2}{\left(1+a_{n,p_n,q_n}b\right)}=0,$$

by taking the limit of both sides of the inequality (5), we get

$\delta(A)\leq\delta(A_1)=0$, which implies

$$st_A - \lim_n \left\| R_{n,p_n,q_n}(e_1;x) - e_1 \right\| = 0. \tag{6}$$

Also, by using Lemma 1, we may write

$$\left| R_{n,p_n,q_n}(e_2;x) - e_2 \right| = \left| \frac{p_n^{n-1}}{a_{n,p_n,q_n} b_{n,p_n,q_n}} \left(\frac{a_{n,p_n,q_n} x}{1 + a_{n,p_n,q_n} x} \right) + \frac{q_n [n-1]_{p_n,q_n}}{a_{n,p_n,q_n} b_{n,p_n,q_n}} \left(\frac{a_{n,p_n,q_n} x}{1 + a_{n,p_n,q_n} x} \right)^2 - x^2 \right|$$

$$= \frac{p_n^{n-1}}{b_{n,p_n,q_n}} \frac{x}{1 + a_{n,p_n,q_n} x} + \left(1 - \frac{1}{\left(1 + a_{n,p_n,q_n} x\right)^2} \right) x^2 + \frac{p_n^{n-1`}}{[n]_{p_n,q_n}} \frac{x^2}{\left(1 + a_{n,p_n,q_n} x\right)^2}.$$

Now, by taking the maximum of both sides of the last equality on $[0,b]$ with $0 < b < \frac{1}{a_{n,q_n}}$

$$\left| R_{n,p_n,q_n}(e_2;x) - e_2 \right| \le \frac{p_n^{n-1}}{b_{n,p_n,q_n}} \frac{b}{1 + a_{n,p_n,q_n} b} + \left(1 - \frac{1}{\left(1 + a_{n,p_n,q_n} b\right)^2} \right) b^2 + \frac{p_n^{n-1`}}{[n]_{p_n,q_n}} \frac{b^2}{\left(1 + a_{n,p_n,q_n} b\right)^2}.$$

From (2), it can be easily seen that

$$st_A - \lim_n \frac{p_n^{n-1}}{b_{n,p_n,q_n}} \frac{b}{1 + a_{n,p_n,q_n} b} = st_A - \lim_n \left(1 - \frac{1}{\left(1 + a_{n,p_n,q_n} b\right)^2} \right) b^2 = st_A - \lim_n \frac{p_n^{n-1`}}{[n]_{p_n,q_n}} \frac{b^2}{\left(1 + a_{n,p_n,q_n} b\right)^2} = 0$$

.

Then, we can get

$$\left\| R_{n,p_n,q_n}(e_2;x) - e_2 \right\| < \varepsilon.$$

Now, for given $\varepsilon > 0$, we define the following sets

$$A := \left\{ n \in \mathbb{N} : \left\| R_{n,p_n,q_n}(e_2;.) - e_2 \right\| \ge \varepsilon \right\}, \tag{7}$$

$$A_1 := \left\{ n \in \mathbb{N} : \frac{p_n^{n-1}}{b_{n,p_n,q_n}} \frac{b}{1 + a_{n,p_n,q_n} b} \ge \frac{\varepsilon}{3} \right\},$$

$$A_2 := \left\{ n \in \mathbb{N} : \left(1 - \frac{1}{\left(1 + a_{n,p_n,q_n} b\right)^2} \right) b^2 \ge \frac{\varepsilon}{3} \right\},$$

$$A_2 := \left\{ n \in \mathbb{N} : \frac{p_n^{n-1`}}{[n]_{p_n,q_n}} \frac{b^2}{\left(1 + a_{n,p_n,q_n} b\right)^2} \ge \frac{\varepsilon}{3} \right\},$$

From (7), we may write $A \subseteq A_1 \bigcup A_2 \bigcup A_3$ and we get

$$\delta\left\{n\in\mathbb{N}:\left\|R_{n,p_n,q_n}\left(e_2;.\right)-e_2\right\|\geq\varepsilon\right\}\leq\delta\left\{n\in\mathbb{N}:\frac{p_n^{n-1}}{b_{n,p_n,q_n}}\frac{b}{1+a_{n,p_n,q_n}b}\geq\frac{\varepsilon}{3}\right\}$$
$$+\delta\left\{n\in\mathbb{N}:\left(1-\frac{1}{\left(1+a_{n,p_n,q_n}b\right)^2}\right)b^2\geq\frac{\varepsilon}{3}\right\}$$
$$+\delta\left\{n\in\mathbb{N}:\frac{p_n^{n-1`}}{\left[n\right]_{p_n,q_n}}\frac{b^2}{\left(1+a_{n,p_n,q_n}b\right)^2}\geq\frac{\varepsilon}{3}\right\}.$$

From (2), it can be easily seen that

$$st_A-\lim_n\frac{p_n^{n-1}}{b_{n,p_n,q_n}}\frac{b}{1+a_{n,p_n,q_n}b}=st_A-\lim_n\left(1-\frac{1}{\left(1+a_{n,p_n,q_n}b\right)^2}\right)b^2=st_A-\lim_n\frac{p_n^{n-1`}}{\left[n\right]_{p_n,q_n}}\frac{b^2}{\left(1+a_{n,p_n,q_n}b\right)^2}=0.$$

By taking the limit overall the last inequality, we have

$\delta\left(A\right)\leq\delta\left(A_1\right)+\delta\left(A_2\right)+\delta\left(A_3\right)=0$, which implies

$$st_A-\lim_n\left\|R_{n,p_n,q_n}\left(e_2;x\right)-e_2\right\|=0. \tag{8}$$

Therefore, by equalities (3), (6), (8) and Theorem 1, we get the desired result. This completes the proof.

Conclusion

By using the notion of statistical convergence we investigated the main result for the statistical convergence rate of a new $\left(p,q\right)$- analogue of the Balázs–Szabados operators.

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