

MINISTRY OF EDUCATION AND RESEARCH
“AUREL VLAICU” UNIVERSITY OF ARAD
FACULTY OF FOOD ENGINEERING, TOURISM AND
ENVIRONMENTAL PROTECTION

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STUDENT SCIENTIFIC SESSION
FACULTY OF FOOD ENGINEERING, TOURISM AND
ENVIRONMENTAL PROTECTION

BOOK OF ABSTRACTS

XXIIIth Edition, May 21-23, 2025

STUDENT SCIENTIFIC SESSION

FACULTY OF FOOD ENGINEERING, TOURISM AND ENVIRONMENTAL PROTECTION “AUREL VLAICU” UNIVERSITY OF ARAD

XXIIIth Edition, May 21-23, 2025

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	SECTION I	Pag.
	Environmental Engineering and Environmental Science; Environmental Protection; Biodiversity; Health; Applied Biology	
	MANGANESE: A SOURCE OF POLLUTION IN THE ENVIRONMENT	7
OP 1	<u>Andreea Ardelean</u> ¹ , Bianca-Denisa Chereji ¹ , Florentina-Daniela Munteanu ¹ ¹ "Aurel Vlaicu" University of Arad, Department of Technical and Natural Sciences, Faculty of Food Engineering, Tourism and Environmental Protection, Romania	
	ANALIZA APEI PLATE ȘI A APEI TERAPEUTICE PENTRU BOLI DE STOMAC DIN STAȚIUNEA BĂILE HERCULANE	8
OP 2	<u>Cătalîn Ciuta</u> , Ionel Popescu-Mitroi Universitatea "Aurel Vlaicu" Arad, Facultatea de Inginerie Alimentară, Turism și Protecția Mediului, str. Elena Drăgoi nr. 2, România	
	TWO FORCES, ONE RESPONSE: THE EFFECT OF CLIMATIC AND BIOTIC STRESS ON PLANTS	9
OP 3	<u>Loredana Hălmăgean</u> , Lucian Copolovici Faculty of Food Engineering, Tourism and Environmental Protection, "Aurel Vlaicu" University, Romania, 2 Elena Dragoi, Arad 310330, Romania	
	TWO FORCES, ONE RESPONSE: THE DUAL IMPACT OF ELEVATED CO₂ AND OZONE ON CABBAGE PLANTS	10
OP 4	<u>Alena Zerni</u> , Lucian Copolovici Faculty of Food Engineering, Tourism and Environmental Protection, "Aurel Vlaicu" University.	
	PARTICULATE MATTER (PM₁, PM_{2.5}, PM₁₀) MONITORING IN INDOOR AND OUTDOOR ENVIRONMENTS AT "AUREL VLAICU" UNIVERSITY OF ARAD, ROMANIA	11
OP 5	<u>Andreea-Corina Marcu</u> ¹ , Lorena Aliana Ioțcu ² , Lucian Octav Copolovici ^{1,2} , Dorina Rodica Chambre ^{1,2} ¹ Faculty of Food Engineering, Tourism and Environmental Protection, "Aurel Vlaicu" University, Romania, 2 Elena Dragoi, Arad 310330, Romania ² Interdisciplinary Doctoral School of Aurel Vlaicu University, 2 Elena Dragoi, Arad 310330, Romania	
	POLUAREA CU DIOXID DE AZOT; STUDIU DE CAZ: AUSTRALIA	12
OP 6	<u>Mădălin Cristea</u> , Simona Condurache-Bota Universitatea „Dunărea de Jos” din Galați, Facultatea de Științe și Mediu, Departamentul de Chimie, Fizică și Mediu, Str. Domnească nr. 111, Galați, România	
	MORPHOLOGICAL AND ELEMENTAL CHARACTERIZATION OF UNUSED AND WASTE TONER POWDERS BY SEM-EDS	13
OP 7	<u>Dacian Bodea</u> ¹ , Cristian Moisa ^{2,*} , Andreea Lupitu ² , Lucian Copolovici ¹ , Dana Copolovici ¹ ¹ Faculty of Food Engineering, Tourism and Environmental Protection, "Aurel Vlaicu" University of Arad, 2 Elena Dragoi St., 310330 Arad, Romania. ² Institute for Interdisciplinary Research, "Aurel Vlaicu" University of Arad, 2 Elena Dragoi St., 310330 Arad, Romania.	
	THE INFLUENCE OF CENTAUREA SALIGNA OIL ON COGNITIVE PROCESSES	14
OP 8	<u>Roxana Emilia Lucaci</u> , Gabriela Dumitru*, Lucian Hrițcu, Elena Todirașcu-Ciornea Department of Biology, Faculty of Biology, Alexandru Ioan Cuza University of Iasi, 700506 Iasi, Romania	
	MENTHA SPICATA L. ATTENUATED SCOPOLAMINE - INDUCED ANXIETY IN THE AMNESTIC ZEBRAFISH MODEL	15
OP 9	<u>Vasile Roman</u> , Gabriela Dumitru*, Lucian Hrițcu, Elena Todirașcu-Ciornea Department of Biology, Faculty of Biology, Alexandru Ioan Cuza University of Iasi, 700506 Iasi, Romania	

	HEMATOLOGICAL AND BIOCHEMICAL MODIFICATIONS IN PANCREATIC CANCER	16
OP 10	<u>Otilia Vidmidî</u> ¹ , Gabriela Dumitru ^{1*} , Silvia Dumitraşcu ² , Elena Todiraşcu-Ciornea ¹ ¹ Faculty of Biology, "Alexandru Ioan Cuza" University, Carol I, 20A, 700505 Iasi, Romania ² Comprehensive School No. 1 Ramnicelu, Principal Street, 12750, Buzau County, Romania	
	DIURNAL VARIATION OF AIR QUALITY PARAMETERS IN AN URBAN PARKING AREA IN MICALACA, ARAD	32
OP11	<u>Sebastian Lucaciu</u> , Dana Copolovici, Lucian Copolovici Faculty of Food Engineering, Tourism and Environmental Protection, "Aurel Vlaicu" University, 2 Elena Dragoi St, 310330 Arad, Romania.	

SECTION II

Food Technology; Food Engineering; Food Chemistry, Nutrition; Food Quality and Food Safety; Agrotourism Management; Sustainability

	VALORIFICAREA PUDREI DE PĂPĂDIE (TARAXACUM OFFICINALE) CA INGREDIENT FUNCȚIONAL ÎN ÎNGHEȚATA FĂRĂ LACTOZĂ	19
OP 1	<u>Claudiu-Ștefan Nemeș</u> , Liana Salanță, Mirela Anamaria Jimborean, Delia Michiu, Anca Corina Fărcaș Universitatea de Științe Agricole și Medicină Veterinară; Facultatea de Știința și Tehnologia Alimentelor; Calea Florești 64, Cluj-Napoca 400394	
	MICROBIOME PROFILING OF RAW BEETROOT VIA 16S rRNA AMPLICON SEQUENCING	20
OP 2	<u>Laurentiu-Adrian Urucu</u> ¹ , Dana Gina Radu ^{1*} "Aurel Vlaicu" University of Arad, Faculty of Food Engineering, Tourism and Environmental Protection, 2 – 4 E. Dragoi street, Arad, Romania	
	INOVAREA APERITIVELOR SĂRATE PRIN INTEGRAREA PUDREI DE GANODERMA LUCIDUM	21
OP 3	<u>Plosca Mădălina-Paula</u> , Chiș Maria Simona, Fărcaș Anca Corina, Păucean Adriana, Diaconeasa Zorița, Ranga Floricuța Facultatea de Știința și Tehnologia Alimentelor, Universitatea de Științe Agricole și Medicină Veterinară, Cluj-Napoca 400372, Mănăștur 3-5, România	
	OPTIMIZAREA COMPOZIȚIEI ȘI ANALIZA CALITATIVĂ A BRÂNZEI FĂGĂRAȘ ÎMBOGĂȚITE CU PUDRE VEGETALE	22
OP 4	<u>Creț-Dioșteanu Maria</u> , Liana Salanță, Mirela Anamaria Jimborean, Carmen Pop Universitatea de Științe Agricole și Medicină Veterinară; Facultatea de Știința și Tehnologia Alimentelor; Calea Florești 64, Cluj-Napoca 400394	
	UTILIZAREA CĂRNII CALDE DE VITĂ ÎN PROCESUL DE FABRICARE A CRENVURSTILOR ȘI OPTIMIZAREA VALORII NUTRIȚIONALE PRIN ÎNCORPORAREA DE DROJDIE INACTIVĂ	23
OP 5	<u>Marius-Andrei Ghejan</u> , Adriana-Paula David, Dorin Țibulcă Universitatea de Științe Agricole și Medicină Veterinară; Facultatea de Știința și Tehnologia Alimentelor; Calea Florești 64, Cluj-Napoca 400394	
	OBTINEREA SI CARACTERIZAREA UNOR BATOANE FUNCTIONALE DIN PRODUSE VEGETALE IMBOGATITE CU COACAZE ROSII (Ribes spp.)	24
OP 6	<u>Benician Raluca Ioana</u> , Liana Salanță Universitatea de Științe Agricole și Medicină Veterinară; Facultatea de Știința și Tehnologia Alimentelor; Calea Florești 64, Cluj-Napoca 400394	
OP 7	EVALUATION OF THE RESPONSE OF LEGUME SPECIES TO PESTICIDE APPLICATION	25

Răzvan Vouciuc¹, Elena Todiraşcu-Ciornea^{1*}, Silvia Dumitraşcu², Gabriela Dumitru¹
¹ Faculty of Biology, "Alexandru Ioan Cuza" University, Carol I, 20A, 700505 Iasi, Romania
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- OP 8 **VALORIFICAREA COJILOR DE STRUGURI ÎN DEZVOLTAREA UNUI BATON FUNCȚIONAL: OPTIMIZAREA COMPOZIȚIEI ȘI EVALUAREA PROPRIETĂȚILOR NUTRIȚIONALE ȘI BIOACTIVE** 26
Pescar Bianca, Liliana Salanta
 Universitatea de Științe Agricole și Medicină Veterinară; Facultatea de Știința și Tehnologia Alimentelor; Calea Florești 64, Cluj-Napoca 400394

POSTERS AND PRODUCTS PRESENTATION SECTION I

Environmental Engineering and Environmental Science; Environmental Protection; Biodiversity; Health; Applied Biology

- PP3 **COMPUTATIONAL SEARCH OF POTENTIAL PSORIASIS THERAPIES THROUGH JAK KINASE FAMILY** 29
Nicoleta Stoian^{1,2}, Liliana Halip², Laura Pitulice¹
¹West University of Timisoara, Faculty of Chemistry, Biology, Geography, 16 H. Pestalozzi, 300115, Timisoara, Romania
²"Coriolan Dragulescu" Institute of Chemistry, 24 Mihai Viteazu Av., 300223, Timisoara, Romania
- PP4 **ANALYSIS OF INDOOR POLLUTANTS IN A RESIDENTIAL ENVIRONMENT** 30
Laurențiu Timiș, Andreea Lupitu *, Cristian Moisă, Lucian Copolovici
 Faculty of Food Engineering, Tourism and Environmental Protection and Institute of Interdisciplinary Research of "Aurel Vlaicu" University, 2 Elena Dragoi St, 310330 Arad, Romania.
- PP9 **VERSATILE ROLES OF QUATERNARY PHOSPHONIUM SALTS IN MODERN CHEMISTRY AND ANTIMICROBIAL APPLICATIONS** 31
Alexandru Buhai, Aurelia Visa
 "Coriolan Dragulescu" Institute of Chemistry, 24 Mihai Viteazul Blv, 300223 Timisoara, Romania

SECTION II

Food Technology; Food Engineering; Food Chemistry, Nutrition; Food Quality and Food Safety; Agrotourism Management; Sustainability

- PP1 **AI IN THE BOTTLE: DESIGNING TARGETED WINE MARKETING CAMPAIGNS FOR YOUNG CONSUMERS** 34
Maria Martinez-López¹, Flavia Bortez², Paola Florescu², Teodor Cilan², Claudia Mureșan²,
¹Cristina Aldavero¹
¹Miguel de Cervantes European University, C. del Padre Julio Chevalier, 2, 47012, Valladolid, Spain
²Aurel Vlaicu University of Arad, Faculty of Engineering, Tourism and Environmental Protection, Elena Dragoi St. 2, Arad, 310330, Romania
- PP5 **SAVOR THE FUSION: ROMANIAN DISHES & SPANISH WINE CULTURE** 36
¹Mirela Hoza, ¹Simina Moroșan-Toderici, ²Pedro Conde Vaz de Carvalho, ¹Paola Florescu, ¹Alexandru Gancea, ¹Alexandru Rus Roman, ¹Cristian Cotuna, ¹Teodor Cilan, ¹Claudia Mureșan, ¹Sergiu Palcu
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²Universidade da Maia – UMAIA, Portugal

	ANTHOCYANIN AND FLAVONOID PROFILING OF RED WINES: IMPLICATIONS FOR COLOR STABILITY	37
PP6	¹<u>Paola Florescu</u>, ¹Flavia Borteş, ¹ Alexandru Gancea, ²Andreea Lupitu, ²Cristian Moisa, ³Maria Martinez López, ¹Claudia Mureşan, ¹Sergiu Palcu, ¹Teodor Cilan, ¹Dana Maria Copolovici, ¹Lucian Copolovici ¹"Aurel Vlaicu" University of Arad, Faculty of Engineering, Tourism and Environmental Protection, Arad 310339, 2 Elena Dragoi Street ²Institute of Interdisciplinary Research "Aurel Vlaicu" University of Arad ³"Miguel de Cervantes" European University, Valladolid, Spain	
	SENSORY HARMONIES: COMPARATIVE ORGANOLEPTIC ANALYSIS OF TRADITIONAL SPANISH WINES AND NEWLY CREATED BLENDS	38
PP7	¹<u>Simina Moroşan -Toderici</u>, ¹Mirela Hoza, ¹Paola Florescu, ²Pedro Filipe Dias de Araújo, ¹Alexandru Gancea, ¹Alexandru Rus Roman, ¹Flavia Borteş, ¹Sergiu Palcu, ¹Teodor Cilan, ¹Claudia Mureşan ¹"Aurel Vlaicu" University of Arad, Faculty of Engineering, Tourism and Environmental Protection, Arad 310339, 2 Elena Drăgoi Street ²Universidade da Maia – UMAIA, Portugal	
	CHEMICAL FINGERPRINTING OF WINE AROMAS VIA LIQUID-LIQUID EXTRACTION AND HS-GC-MS	39
PP8	¹<u>Paul Sălăjan</u>, ¹Flavia Borteş, ¹Paola Florescu, ¹Cristian Cotuna, ²Andreea Lupitu, ²Cristian Moisa, ¹Sergiu Palcu, ¹Teodor Cilan, ¹Lucian Copolovici, ¹Dana Maria Copolovici ¹"Aurel Vlaicu" University of Arad, Faculty of Engineering, Tourism and Environmental Protection, Arad 310339, 2 Elena Dragoi Street ²Institute of Interdisciplinary Research "Aurel Vlaicu" University of Arad	
	COMPARATIVE EVALUATION OF DPPH, FRAP AND PHENOLIC CONTENT IN DIVERSE WINE SAMPLES	40
PP10	¹<u>Simina Moroşan-Toderici</u>, ¹Paola Florescu, ¹Flavia Borteş, ¹Paul Sălăjan, ¹Mirela Hoza, ²Andreea Lupitu, ²Cristian Moisa, ¹Claudia Mureşan, ¹Teodor Cilan, ¹Dana Maria Copolovici, ¹Lucian Copolovici ¹"Aurel Vlaicu" University of Arad, Faculty of Engineering, Tourism and Environmental Protection, Arad 310339, 2 Elena Dragoi Street ²Institute of Interdisciplinary Research "Aurel Vlaicu" University of Arad	
	SHORT-TERM AIR QUALITY ASSESSMENT IN THE URBAN CENTER OF ARAD: DIURNAL TRENDS AND POLLUTION INDICATORS	41
PP11	<u>Borbiľău Lăcrimioara</u>, Dana Copolovici, Lucian Copolovici Faculty of Food Engineering, Tourism and Environmental Protection, "Aurel Vlaicu" University, 2 Elena Dragoi St, 310330 Arad, Romania	
	EVALUAREA IMPACTULUI DE MEDIU ŞI A POLUĂRII FONICE ÎN TIMIŞOARA: PROVOCĂRI ŞI SOLUŢII	42
PP12	<u>Bucşă Sorin</u>, Țigan Eugenia Faculty of Food Engineering, Tourism and Environmental Protection, "Aurel Vlaicu" University, 2 Elena Dragoi St, 310330 Arad, Romania	
	BULZ DACIC	43
Prezentare produs	<u>Țimotei Bonda</u>, Radu Dana Gina Universitatea "Aurel Vlaicu" Din Arad, Facultatea De Inginerie Alimentară, Turism Şi Protecția Mediului	

SECTION I

Environmental Engineering and

Environmental Science

Environmental Protection

Biodiversity

Health

Applied Biology

OP 1. MANGANESE: A SOURCE OF POLLUTION IN THE ENVIRONMENT

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Key-words: manganese, pollution, spectrophotometry, aquatic ecosystem.

Being a heavy metal, manganese is found in nature as various minerals, usually in combination with iron. In human health, it plays a crucial role in cellular metabolism processes [1, 2].

Although manganese pollution is less commonly present in ecosystems due to industrial activities, such as the metallurgical industries, this does not make the risks associated with it any less dangerous [3, 4].

Other ways in which manganese can enter the environment are through soil erosion, especially in soils used in agriculture, fossil fuel combustion, and wastewater discharge [2, 4].

In conclusion, this research aims to determine the presence of manganese in the samples taken from the Mureş River, located in the city of Arad, and whether the amount resulting from the analysis has a negative impact on the environment's living creatures.

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OP 2. ANALIZA APEI PLATE ȘI A APEI TERAPEUTICE PENTRU BOLI DE STOMAC DIN STAȚIUNEA BĂILE HERCULANE

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Rezumat

Lucrarea a analizat calitatea microbiologică și fizico-chimică pentru izvoarele de apă plată (sursa Domogled) și pentru izvoarele de apă terapeutică indicate în tratamentul bolilor de stomac (sursa Neptun II), probele fiind prelevate din stațiunea Băile Herculane (județul Caraș-Severin). În lucrare au fost realizate atât determinări microbiologice (NTG, bacterii coliforme) cât și determinări fizico-chimice (pH, conductivitate, TDS, salinitate).

Rezultatele obținute în laborator arată un nivel scăzut de număr total de germeni (NTG) în apa plată și absența bacteriilor coliforme. În schimb, apa terapeutică pentru boli de stomac prezintă un număr total de germeni îngrijorător, peste limita microbiologică admisă de standardele de apă potabilă^{5,6,7}.

În urma analizei fizico-chimice s-a constatat că apa plată are un pH ușor alcalin (pH 7,6), un conținut redus de substanțe solubile (TDS 380 mg/l) și un nivel optim de salinitate (salinitate 0,4 g/l). Apa terapeutică pentru boli de stomac are un pH ușor acid (pH 6,2), un conținut ridicat de substanțe solubile (TDS 1948 mg/l) și un nivel de salinitate ridicat (salinitate 1,2 g/l).

Datorită purității microbiologice, pH-ului ușor alcalin, conținutului redus de substanțe solubile (TDS) care se corelează cu un reziduu sec scăzut, apa plată de Herculane poate concura cu succes cu orice brand de apă potabilă din țară și chiar din străinătate.

Recomandarea autorilor este verificarea ritmică și riguroasă a surselor de apă, de către organele sanitare competente (Direcția de Sănătate Publică), mai ales a izvoarelor de apă terapeutică care, datorită dezinteresului administrației publice locale, au intrat în paragină și pot pune în pericol sănătatea turiștilor care folosesc cura internă de apă terapeutică pentru boli de stomac.

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OP 3. TWO FORCES, ONE RESPONSE: THE EFFECT OF CLIMATIC AND BIOTIC STRESS ON PLANTS

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The present study explores the interactive effects of elevated atmospheric CO₂ levels and biotic stress induced by *Eurydema ventralis* infestation on the physiological and biochemical responses of *Brassica oleracea* var. *Buzău*. The working hypothesis posits that biotic stress significantly alters photosynthetic performance and the accumulation of key secondary metabolites, particularly under elevated CO₂ concentrations. Cabbage plants were grown under controlled environmental conditions at three atmospheric carbon dioxide levels (400, 800, and 1200 ppm) for three weeks, after which they were subjected to biotic stress by insect infestation. Photosynthetic parameters were measured using a GFS-3000 infrared gas analyzer, while chlorophylls and carotenoids were quantified through high-performance liquid chromatography (HPLC). Total phenolic content, flavonoids, and antioxidant activity were assessed spectrophotometrically. The results revealed that biotic stress significantly declines net photosynthetic rate and stomatal conductance, with the most pronounced effects observed under elevated CO₂ conditions. Concurrently, a decrease in chlorophyll content and an increase in zeaxanthin and β -carotene levels were recorded, suggesting activation of photoprotective mechanisms. Moreover, reductions in total phenolics, flavonoids, and antioxidant capacity indicate a potential compromise of the plants' biochemical defense systems under combined stress conditions. This study highlights the complex interplay between climatic and biotic factors and emphasizes the need for further investigation into plant resilience mechanisms under future climate scenarios.

Keywords: biotic stress, climate changes, photosynthetic parameters

OP 4. TWO FORCES, ONE RESPONSE: THE DUAL IMPACT OF ELEVATED CO₂ AND OZONE ON CABBAGE PLANTS

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Climate change and air pollution represent two converging forces that increasingly affect plant development and resilience. This study examines the combined effects of elevated atmospheric CO₂ concentrations (400, 800, and 1200 ppm) and oxidative stress induced by short-term ozone exposure (100 ppb) on the secondary metabolism and physiological performance of *Brassica oleracea* var. *Buzău*. Plants were cultivated under controlled environmental conditions, and photosynthetic parameters were assessed using a GFS-3000 portable gas exchange system. Chlorophyll a and b, along with carotenoids such as zeaxanthin and β-carotene, were quantified through HPLC. Secondary metabolites, including total phenolics and flavonoids, were measured spectrophotometrically, along with antioxidant capacity, using the DPPH method. The results revealed a significant decline in net photosynthetic rate and stomatal conductance following ozone exposure, particularly in plants grown under elevated CO₂. A partial recovery was observed after one week, but baseline levels were not fully restored. Chlorophyll content decreased post-treatment, while β-carotene levels increased, suggesting activation of photoprotective responses. Notably, plants exposed to oxidative stress under high CO₂ conditions exhibited lower phenolics, flavonoids, and antioxidant activity levels. These findings indicate that elevated CO₂ may not always confer increased stress tolerance and could amplify plant vulnerability to oxidative agents such as ozone. The study underscores the complex interplay between climate-related factors and pollutant exposure, highlighting the need for further research into adaptive mechanisms and strategies for crop protection in changing environments.

Keywords: abiotic stress, climate changes, ozone, photosynthetic parameters

OP 5. PARTICULATE MATTER (PM₁, PM_{2.5}, PM₁₀) MONITORING IN INDOOR AND OUTDOOR ENVIRONMENTS AT "AUREL VLAICU" UNIVERSITY OF ARAD, ROMANIA

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Abstract

Air pollution has remained a major concern for both environmental and human health reasons. While outdoor air quality is frequently monitored, indoor air quality also demands close attention, as individuals spend roughly 70–80% of their time indoors—where exposure to air pollutants can be significant [1]. Particulate matter (PM), along with other airborne contaminants, plays a key role in the deterioration of air quality in both outdoor and indoor environments. In educational settings, elevated levels of PM can negatively impact students' health and academic performance [2].

This study presents daily measurements of PM₁, PM_{2.5}, and PM₁₀ concentrations taken between May 9 and May 15, 2024, at five intervals (8:00, 10:00, 12:00, 14:00, and 16:00) within the indoor spaces of the M University Complex at "Aurel Vlaicu" University of Arad. The monitored locations included two corridors, two student laboratories, an auditorium, and one outdoor site. The results showed relatively low indoor PM levels, suggesting good air quality conducive to student well-being. Average PM₁ concentrations ranged from 2 to 6 µg/m³, PM_{2.5} from 4 to 11 µg/m³, and PM₁₀ from 5 to 14 µg/m³. These concentrations were notably influenced by foot traffic and occupancy levels. Other contributing factors included the use of teaching materials, which often generate fine particles, and the condition of the interior environment. Old furniture and outdated equipment, especially when poorly maintained, were potential sources of particulate emissions. Additionally, the absence of recent renovations likely worsened the situation, as aging infrastructure tends to accumulate and release dust into the air.

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OP 6. POLUAREA CU DIOXID DE AZOT; STUDIU DE CAZ: AUSTRALIA

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În ultimele decenii, poluarea aerului a devenit o problemă globală majoră, cu implicații asupra sănătății publice, ecosistemelor și mediului, în general. Printre principalii poluanți se numără oxizii, în special dioxidul de azot care, la rândul său, poate reacționa cu alte substanțe sau, sub acțiunea anumitor factori, poate determina formarea altor poluanți^{1,2}. O concentrație atmosferică ridicată de NO₂ poate afecta inima, ochii, pielea, plămânii sau chiar sistemul imunitar³.

Studiul de caz se referă la calitatea aerului în două orașe importante din nordul și sudul extrem ale Australiei: Darwin, respectiv Adelaide. Aceste locații au fost alese ca semnificative din punct de vedere al calității reduse a aerului, cauzate de frecvențele incendii și furtuni de praf, dar și dată fiind disponibilitatea datelor, care permit efectuarea de studii fundamentate.

Am constatat că, de-a lungul a 15 ani consecutivi, a crescut semnificativ concentrația de dioxid de azot în orașele investigate, fiind influențată de traficul rutier, dezvoltarea industrială și de evenimentele naturale, precum un incendiu din 2019. Dată fiind încălzirea globală, este de așteptat să crească frecvența și gravitatea incendiilor de vegetație, care oricum sunt frecvente în Australia, date fiind clima, solul și vegetația uscate, care, la Darwin, se accentuează în sezonul uscat, între lunile mai și octombrie, în timp ce Adelaide este cunoscut ca cel mai uscat dintre orașele australiene. Pe de o parte, arderea vegetației accentuează uscarea solului, ceea ce potențează uscarea vegetației, favorizând alte incendii, iar pe de altă parte, produce cantități ridicate de dioxid de azot. Astfel, activitățile umane produc dezechilibre ale ecosistemelor, care își pot găsi cu greu mecanisme de autoreglare, consecințele răsfrângându-se asupra sănătății umane și a mediului, care vor fi greu de controlat.

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OP 7. MORPHOLOGICAL AND ELEMENTAL CHARACTERIZATION OF UNUSED AND WASTE TONER POWDERS BY SEM-EDS

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Abstract:

Laser printer toner powders are complex mixtures composed mainly of thermoplastic polymers, pigments, iron oxides, and various inorganic additives. In this study, we conducted a comparative morphological and elemental characterization of unused (CMYK) and waste toner powders using Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray Spectroscopy (EDS). SEM analysis revealed spherical and aggregated particles ranging from 5 to 15 µm in unused samples, while the waste toner exhibited agglomerated, morphologically irregular structures, suggesting thermal and mechanical alteration during printing. EDS analysis confirmed the presence of key elements such as iron (up to 22 wt%), nickel (up to 16 wt%), copper and zinc (up to 11 wt%), as well as significant amounts of carbon (4-13 wt%) and silicon, indicating a mixture of magnetic pigments, polymer matrices, and pigment-specific additives. Although spectroscopic identification of polymer types (e.g., FTIR) was not conducted, the observed carbon-rich morphology is consistent with previous studies linking toner particles to microplastic-like behavior¹. Globally, over 6000 tons of toner powder are estimated to be released into the environment annually due to incomplete use and inadequate disposal², reinforcing the environmental importance of controlled recycling and further investigation into toner degradation and persistence³.

Keywords: environmental impact, morphology, SEM-EDS characterization, toner powders, waste management.

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OP 8. THE INFLUENCE OF *CENTAUREA SALIGNA* OIL ON COGNITIVE PROCESSES

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Recently, in alternative medicine systems, an increasing number of medicinal plants have been used to improve memory, cognitive function, and also in the treatment of neurodegenerative diseases, such as Alzheimer's disease. *Centaurea saligna* is a plant endemic to Turkey, species of this genus being often used for wound healing, but also in the treatment of many diseases due to their astringent, antidiabetic, antiproliferative, antimicrobial, antioxidant, anti-inflammatory, etc. properties.^{1, 2, 3}

The aim of this work is to determine the effect of *Centaurea saligna* on memory process in *Danio rerio*, by inducing an animal model of dementia. The results of the study showed that the use of *Centaurea saligna* essential oil helps improve cognitive processes, it being known that the multitude of flavonoids in the composition of this species contributes to the optimization of memory and learning.

Thus, the Y-maze test - essential for testing spatial memory, respectively, for acquiring an ability to retain a favorable route, records the best results in the group treated with *Centaurea saligna* at a concentration of 200 µl/L. These favorable results could be due to the great diversity of biologically active compounds contained in the *Centaurea saligna* species, with a role in the development of recognition memory, respectively, of non-associative learning.

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OP 9. *MENTHA SPICATA* L. ATTENUATED SCOPOLAMINE - INDUCED ANXIETY IN THE AMNESTIC ZEBRAFISH MODEL

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Mentha spicata has a long history in traditional medicine, being used for a wide range of conditions, such as the treatment of bronchitis, nausea, flatulence, anorexia and liver diseases. The species is valued for its stomach tonic, antitussive, anticonvulsant, astringent, analgesic and sedative properties.

Mentha spicata is known for its rich phytochemical composition, which includes compounds such as polyphenols, flavonoids and essential oils, with significant antioxidant properties. In addition, extracts of *Mentha spicata* have demonstrated the ability to inhibit lipid oxidation and stabilize color in food products, being useful in preserving food quality ^{1, 2, 3}.

The aim of this work is to determine the effect of *Mentha spicata* L. oil - a plant with antioxidant effects against the action of free radicals on anxious behavior in *Danio rerio*, by inducing an animal model of dementia. Thus, the administration of oil in concentrations of 50 µl/L, 100 µl/L and 200 µl/L to zebrafish caused a significant increase in the speed and distance traveled compared to the group treated only with scopolamine (100µM), in which they recorded very low values. The results obtained demonstrated that *Mentha spicata* has significant anxiolytic properties, counteracting the anxiogenic effects induced by scopolamine, which suggests the potential of this plant in anxiety management.

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OP 10. HEMATOLOGICAL AND BIOCHEMICAL MODIFICATIONS IN PANCREATIC CANCER

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Pancreatic cancer is one of the most lethal forms of cancer, characterized by a low overall survival and rapid progression, early diagnosis being difficult due to nonspecific symptoms and the anatomical location of the pancreas ^{1,2}.

This study has as its main objective the analysis of changes in some hematological and biochemical parameters in a group of 30 patients diagnosed with pancreatic cancer, as it is known that these data can provide valuable information regarding the stage of the disease, prognosis and response to treatment. The analysis includes the evaluation of several hematological parameters, such as hemoglobin, hematocrit, red blood cell count and white blood cell count. The values of these parameters can reflect the general health of the patients and may indicate the presence of anemia or inflammation, both of which are frequently associated with this condition. The levels of some liver enzymes, such as alanine aminotransferase, aspartate aminotransferase, gamma-glutamyl transpeptidase and alkaline phosphatase, are also analyzed. Elevation of these enzymes may signal liver damage, a common complication in patients with pancreatic cancer, due to possible liver metastases or bile duct obstruction.

The results obtained show that patients with pancreatic cancer present multiple hematological and biochemical abnormalities, which can negatively influence the evolution of the disease and the prognosis. Anemia, chronic inflammation, liver damage and high variability of white blood cell values are common characteristics of these patients. Careful monitoring of these parameters is essential for assessing the stage of the disease, planning treatment and improving the prognosis of patients.

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OP11. DIURNAL VARIATION OF AIR QUALITY PARAMETERS IN AN URBAN PARKING AREA IN MICALACA, ARAD

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This study presents environmental monitoring data collected from a parking area located in Micalaca, Arad, between April 28 and May 10, 2025. Parameters measured include air temperature ($^{\circ}\text{C}$), relative humidity (%), formaldehyde (HCHO , g/m^3), total volatile organic compounds (TVOC, g/m^3), and particulate matter concentrations ($\text{PM}_{2.5}$, $\text{PM}_{1.0}$, PM_{10} , $\mu\text{g}/\text{m}^3$). The dataset highlights variations in air quality indicators across different times of day—morning, noon, and afternoon. The average temperature during the monitoring period was 20.95°C , while relative humidity averaged 44.74%. Mean concentrations of HCHO and TVOC were $41.26 \text{ g}/\text{m}^3$ and $173.63 \text{ g}/\text{m}^3$, respectively. Among particulate pollutants, $\text{PM}_{2.5}$ averaged $6.7 \mu\text{g}/\text{m}^3$, $\text{PM}_{1.0}$ $4.74 \mu\text{g}/\text{m}^3$, and PM_{10} $6.21 \mu\text{g}/\text{m}^3$. Notably, pollution levels tended to peak during noon and afternoon hours, with average TVOC and $\text{PM}_{2.5}$ values reaching $197.5 \text{ g}/\text{m}^3$ and $8.33 \mu\text{g}/\text{m}^3$ at noon, respectively. The results suggest a clear diurnal pattern influenced by temperature, vehicular activity, and atmospheric conditions. Morning periods showed comparatively lower pollution levels, progressively increasing throughout the day. These findings emphasize the need for continuous monitoring and potential mitigation strategies in urban parking areas, especially during peak activity hours.

Keywords: Air quality, urban pollution, parking emissions, diurnal variation.

SECTION II

Food Technology

Food Engineering

Food Chemistry, Nutrition

Food Quality and Food Safety

Agrotourism Management

Sustainability

OP 1. VALORIFICAREA PUDREI DE PĂPĂDIE (*TARAXACUM OFFICINALE*) CA INGREDIENT FUNCȚIONAL ÎN ÎNGHEȚATA FĂRĂ LACTOZĂ

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Intoleranța la lactoză se datorează în special malabsorbției de lactoză, aceasta trecând prin intestin, fără a fi hidrolizată, are capacitatea de acționa ca un substrat nutritiv pentru bacteriile din colon și pot cauza diaree osmotică. Iar în funcție de cantitatea de lactoză ingerată, cât și de activitatea lactazei, pot apărea simptome gastro-intestinale precum greață, diaree, flatulențe, dureri (în special în zona abdominală), de asemenea pot apărea și simptome sistematice, precum dureri de cap. Marea parte a nou-născuților prezintă niveluri ridicate de enzimă lactază, dar acestea încep să scadă după renunțarea la alăptare, scăzând treptat în primii 10 ani de viață. ¹

De asemenea, datorită numărului în creștere a persoanelor diagnosticate cu boli cardiovasculare, diabet, boli ale ficatului, tumori, etc. datorită unui sistem imunitar slăbit sau din cauza unui regim alimentar deficient, păpădia, *Taraxacum officinale*, s-a dovedit a fi cunoscută pentru proprietățile terapeutice împotriva acestor probleme de sănătate. Adăosul de *Taraxacum officinale* în produsele lactate vine în ajutorul creșterii imunității, scăderii posibilor factori care pot cauza bolile enumerate datorită conținutului ridicat în vitamine, minerale, flavonoidele, acizi fenolici, carotenoide, etc. ²

Datorită acestor considerate lucrarea are scopul de a dezvolta și caracteriza înghețata obținută din lapte și smântână delactozată cu adăos de pudră de păpădie pentru exploatarea *Taraxacum officinale* și de asemenea pentru a obține un produs funcțional cu beneficii atât pentru persoanele care își doresc un stil de viață mai bun, dar și al persoanelor cu problemele de sănătate mai sus menționate.

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OP 2. MICROBIOME PROFILING OF RAW BEETROOT VIA 16S rRNA AMPLICON SEQUENCING

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Understanding the microbial communities associated with raw plant-based foods is essential for advancing food safety, quality control, and the development of functional food products^{1,2}. Beetroot (*Beta vulgaris*), a root vegetable valued for its bioactive compounds and nutritional content, may serve as a niche for diverse bacterial populations³. In this study, the bacterial microbiota of raw beetroot was profiled using 16S rRNA amplicon sequencing via the Illumina MiSeq platform, allowing for comprehensive taxonomic analysis without the need for cultivation. Two sample treatments, heat inactivation and sonication, were applied to beetroot prior to DNA extraction to facilitate microbial cell lysis and improve recovery of community DNA. The bioinformatic analysis suggested possible differences in community composition between the treatments, with sonicated samples tending to exhibit higher bacterial richness and consistency, although these trends were not statistically significant, likely due to the limited number of samples. Dominant taxa included members of *Proteobacteria*, *Actinobacteria*, and *Bacteroidota*, with genera such as *Pseudomonas*, *Acinetobacter*, and *Sphingomonas* frequently detected. These findings highlight the value of high-throughput sequencing in exploring microbial complexity in minimally processed foods and suggest potential applications of raw beetroot microbiota in food quality assessment, fermentation and probiotic exploration.

Keywords: microbial diversity, raw beetroot microbiota, 16S rRNA amplicon sequencing

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OP 3. INOVAREA APERITIVELOR SĂRATE PRIN INTEGRAREA PUDREI DE *GANODERMA LUCIDUM*

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Acest studiu investighează potențialul pulberii de *Ganoderma lucidum* ca ingredient funcțional într-un produs sărat de tip aperitiv, urmărind optimizarea rețetei și evaluarea impactului asupra caracteristicilor produsului finit.

Pentru atingerea acestui obiectiv, au fost testate trei niveluri de încorporare a pulberii de *Ganoderma lucidum* (3%, 6% și 9%), iar produsele rezultate au fost supuse analizelor fizico-chimice (umiditate, proteine – metoda Kjeldahl, lipide – metoda Soxhlet, conținut mineral), fitochimice (polifenoli totali, flavonoide, activitate antioxidantă prin DPPH, ABTS și CUPRAC), precum și caracterizării cromatografice a polifenolilor individuali (HPLC). Evaluările senzoriale și de culoare au fost, de asemenea, efectuate pentru a determina gradul de acceptabilitate al produsului.

Rezultatele au evidențiat că suplimentarea cu *Ganoderma lucidum* a crescut proporțional nivelul compușilor bioactivi și activitatea antioxidantă, influențând totodată profilul senzorial. Concentrația optimă (6%) a fost stabilită prin echilibrarea beneficiilor funcționale cu acceptabilitatea senzorială.

Concluziile susțin utilizarea *Ganoderma lucidum* ca ingredient valoros în produsele de panificație sărate, datorită aportului său nutrițional și funcțional semnificativ.

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OP 4. OPTIMIZAREA COMPOZIȚIEI ȘI ANALIZA CALITATIVĂ A BRÂNZEI FĂGĂRAȘ ÎMBOGĂȚITE CU PUDRE VEGETALE.

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Scopul acestui studiu a fost de a optimiza tehnologia de obținere a brânzei Făgăraș prin integrarea pudrei de roșii și dovleac sub formă de microcapsule, în vederea creșterii valorii nutriționale și funcționale a produsului final. Microcapsulele au fost realizate prin tehnici avansate de microîncapsulare, având rolul de a proteja compușii bioactivi și de a permite eliberarea lor controlată în structura brânzei. Pentru a evidenția influența microcapsulelor asupra compoziției și structurii produsului, s-au analizat parametrii fizico-chimici: pH-ul, conținutul de umiditate, proteinele și lipidele. Rezultatele au arătat că adăugarea microcapsulelor îmbunătățește stabilitatea și profilul senzorial al brânzei, subliniind potențialul tehnologiei de microîncapsulare în dezvoltarea produselor lactate funcționale cu valoare adăugată.

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OP 5. UTILIZAREA CĂRNII CALDE DE VITĂ ÎN PROCESUL DE FABRICARE A CRENVURSTILOR ȘI OPTIMIZAREA VALORII NUTRIȚIONALE PRIN ÎNCORPORAREA DE DROJDIE INACTIVĂ

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Influențele recomandărilor din partea țărilor dezvoltate asupra orientărilor nutriționale au la bază intenția de dezvoltare pe plan tehnologic, deoarece resursele alimentare nu sunt inepuizabile. În acest caz un spectru larg de consumatori suferă de diferite deficiențe de nutrienți esențiali, fapt care a concentrat atenția cercetărilor spre dezvoltarea de produse noi, funcționale și cât mai sustenabile. S-a demonstrat că nivelul de nutrienți necesari și gradul acestora de asimilare sunt comparativ mai ridicate, însă această lucrare își propune dezvoltarea unui produs cât mai sănătos prin utilizarea cărnii de vită în stare caldă, eliminând astfel din procesul tehnologic adaosul de polifosfați.(1)

În contextul actual cerința pentru proteine cât mai accesibile a cunoscut o reală ascensiune. Dezvoltarea unor surse alternative de proteine a devenit un subiect de interes în rândul cercetătorilor de profil astfel printre diversele proteine unicelulare s-a descoperit că fulgii de drojdie prezintă proprietăți tehnico-funcționale. Fulgii de drojdie inactivă au atras atenția asupra lor prin compoziția chimică bogată într-o serie compuși esențiali în plus față de conținutul ridicat de proteine.(2)

Lucrarea combină armonios utilizarea de carne caldă cu scopul eliminării adaosului de polifosfați, și adaosul de fulgi de drojdie inactivă *Saccharomyces cerevisiae* rezultați în urma fabricării berii, pentru optimizarea profilului nutrițional. Fabricarea bradului cald și a crenvurștilor respectă tehnologia convențională, fiind în plus îmbunătățită prin adaosul de drojdie inactivă rezultând un produs funcțional și cu o valoare proteică ridicată.

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OP 6. OBTINEREA SI CARACTERIZAREA UNOR BATOANE FUNCTIONALE DIN PRODUSE VEGETALE IMBOGATITE CU COACAZE ROSII (*Ribes* spp.)

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Coacăzele roșii (*Ribes* spp.) sunt apreciate atât pentru consumul în stare proaspătă, cât și pentru utilizarea lor în sucuri, deserturi și alte produse alimentare. Acest studiu a avut ca obiectiv dezvoltarea și caracterizarea unor batoane funcționale pe bază de ingrediente vegetale, îmbogățite cu coacăze roșii, prin evaluarea impactului acestora asupra valorii nutriționale și a proprietăților funcționale ale produsului final. Au fost determinați parametri fizico-chimici ai batoanelor formulate, conținutul de polifenoli și activitatea antioxidantă, evidențiind influența coacăzelor roșii asupra stabilității produsului și valorii sale bioactive. Conservarea coacăzelor roșii sub formă de batoane funcționale oferă multiple avantaje, inclusiv o durată de valabilitate extinsă și o utilizare convenabilă ca gustare sănătoasă. Rezultatele acestui studiu subliniază potențialul batoanelor funcționale îmbogățite cu coacăze roșii în dezvoltarea de produse inovatoare în industria alimentară și în domeniul nutriției.

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OP 7. EVALUATION OF THE RESPONSE OF LEGUME SPECIES TO PESTICIDE APPLICATION

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Agriculture is continuously evolving, and modern farming along with agricultural management practices often rely on the use of pesticides, which undoubtedly play a crucial role in reducing labour demands and increasing the production of vegetables, cereals, and fruits. This is achieved by preventing the occurrence of diseases, mitigating the harmful effects caused by insects, weeds, and/or the attack of pathogenic fungi or bacteria. Additionally, pesticides contribute to improving the quality of vegetables and fruits and to achieving maximum crop yield. Ensuring food availability is an especially important issue that requires the use of various tools and alternative methods to meet human needs.

However, the excessive use of pesticides, especially through their application in increasingly higher doses, can lead to toxicity issues, resulting in harmful effects on plant growth and development, as well as in the destruction of biodiversity. Many birds, aquatic organisms, and animals are under constant threat from pesticides that endanger their survival¹. At the same time, pesticides raise concerns regarding environmental sustainability and global stability, given the pollution and long-term impact of these chemical agents on the environment and, consequently, on the human body².

Considering that, on the one hand, the use of pesticides is very common in vegetable crops, and on the other hand, that the presence of these substances in the environment may act as a triggering factor for oxidative stress, the objective of our study was to determine how pesticide application might influence the activity of certain enzymes from the oxidoreductase class, the concentration of carotenoid and chlorophyll pigments, as well as the level of malondialdehyde in the leaf tissue of several legume species.

The results obtained indicate that, although pesticides represent the backbone of the agri-food sector, they can lead to disruptions in the normal metabolic pathways of plant organisms and may pose a potential risk to the agricultural ecosystem, becoming an obstacle to achieving sustainability.

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**OP 8. VALORIFICAREA COJILOR DE STRUGURI ÎN DEZVOLTAREA UNUI
BATON FUNCȚIONAL: OPTIMIZAREA COMPOZIȚIEI ȘI EVALUAREA
PROPRIETĂȚILOR NUTRIȚIONALE ȘI BIOACTIVE**

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Acest studiu a avut ca scop valorificarea tescovinei de struguri în dezvoltarea unui baton funcțional, luând în considerare potențialul său nutrițional și bioactiv. Tescovina a fost procesată pentru a-și păstra compușii bioactivi și integrată într-o formulă de baton, combinată cu alte ingrediente pe bază de plante, pentru a crea un produs cu un profil nutrițional echilibrat. Produsul a fost caracterizat fizico-chimic prin determinarea unor parametri precum umiditatea, conținutul de proteine, lipidele, polifenolii și activitatea antioxidantă și a fost evaluat pentru a evidenția beneficiile sale pentru sănătate. Rezultatele au arătat că adăugarea de tescovine de struguri la formula batonului a îmbunătățit semnificativ valoarea nutrițională a produsului. Acest studiu sugerează un potențial ridicat de utilizare a tescovinei de struguri în industria alimentară, contribuind la dezvoltarea de produse funcționale sustenabile.

POSTERS PRESENTATION

SECTION I

Environmental Engineering and

Environmental Science

Environmental Protection

Biodiversity

Health

Applied Biology

PP3. COMPUTATIONAL SEARCH OF POTENTIAL PSORIASIS THERAPIES THROUGH JAK KINASE FAMILY

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Psoriasis and other autoimmune diseases are becoming more common due to their complex nature. Existing treatments focus on blocking specific proteins that drive the disease, like TNF- α , IL-17 and IL-33. A newer strategy involves targeting Janus kinases (JAKs), especially JAK1, given its involvement in cytokine signaling. While JAK1 inhibitors have demonstrated notable success in reducing psoriasis symptoms, their use can be limited by side effects (e.g. immune suppression) induced by JAK2 which shares over 85% similarity with JAK1.¹ This study aims to identify JAK1 inhibitors that are highly selective, minimizing their action on JAK2 increasing therapy safety using computational chemistry and cheminformatics methods.² We analyzed interactions between the studied compounds and incorporated protein flexibility into molecular docking simulations, utilizing multiple static frameworks to represent the full conformational space of JAK1. Out of the initial library of 4.2 million compounds, we identified only 79 that exhibited potential selectivity for JAK1 and minimal interaction with JAK2.

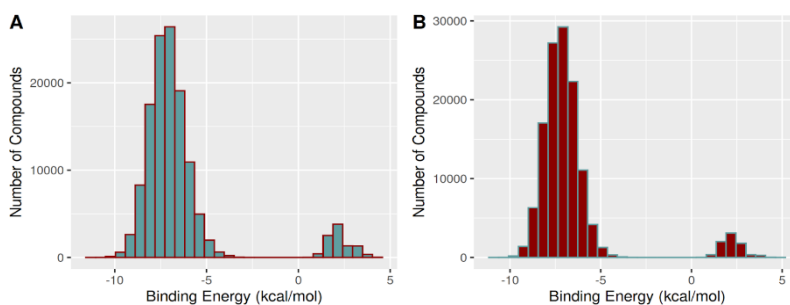


Fig1. Histogram of Binding Energies for two JAK1 frameworks

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PP 4. ANALYSIS OF INDOOR POLLUTANTS IN A RESIDENTIAL ENVIRONMENT

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Indoor air quality presents a major concern since people spend more and more time indoors. The air outside is increasingly polluted, which also influences the air inside, and the presence of various pollutants in the indoor air is increasing. The presence of common contaminants such as particulate matter, formaldehyde, volatile organic compounds, and carbon dioxide. Particulate matter comprises fine particles, including dust, smoke, mold spores, and soot from candles or cooking, and it can remain airborne for extended periods. Formaldehyde is often emitted from pressed wood furniture, laminate flooring, and certain textiles. Volatile organic compounds are commonly found in paints, varnishes, cleaning agents, air fresheners, and cosmetics. Elevated carbon dioxide levels frequently occur in poorly ventilated spaces, such as crowded offices or classrooms with closed windows. For example, a poorly ventilated home with frequent air fresheners and new furniture may accumulate a mixture of formaldehyde and volatile organic compounds, significantly degrading indoor air quality. Studies indicate indoor air pollution levels can be two to five times higher than outdoors. To maintain good indoor air quality, it is important to ensure proper ventilation, use air purifiers, and minimize the use of substance-emitting products.

Keywords: particulate matter, formaldehyde, volatile organic compounds, carbon dioxide.

PP9. VERSATILE ROLES OF QUATERNARY PHOSPHONIUM SALTS IN MODERN CHEMISTRY AND ANTIMICROBIAL APPLICATIONS

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A growing interest in quaternary phosphonium salts (QPSs) aligns with the principles of green chemistry, which promote environmentally friendly, health-conscious, and efficient chemical practices. This interest is fueled by the clear benefits these organic compounds provide, such as easy ways to make them and excellent physical and chemical properties, allowing their use in various areas like industry, medicine, and biology. This study presents the synthesis and characterization of six quaternary phosphonium salts: ethyltriphenylphosphonium iodide, butyltriphenylphosphonium iodide, pentyltriphenylphosphonium iodide, ethyl-3-furyldiphenylphosphonium iodide, ethyl-di(3-furyl)phenylphosphonium iodide, and ethyl-tri(3-furyl)phosphonium iodide. To understand the structure, we used different nuclear magnetic resonance (NMR) techniques, like ^1H -NMR, ^{13}C -NMR, ^{13}C -APT (Attached Proton Test), ^{31}P -NMR, COSY, HSQC, and HMBC along with FTIR spectroscopy. These methods gave us important details about the molecular structure, enabling accurate interpretation of the spectral data and confirmation of the synthesized compounds. The results of this study show that adding more 3-furyl groups to the phosphorus atom causes the signal in the ^{31}P -NMR spectrum to shift to higher fields, which means it shows lower ppm values¹. Preliminary investigations have been initiated to evaluate the antimicrobial activity of these compounds against representative Gram-positive (*Staphylococcus aureus*) and Gram-negative (*Escherichia coli*) strains at concentrations of 0.25%, 0.5%, and 1%. While the antimicrobial studies are currently ongoing, the promising structural features of the synthesized QPSs suggest potential for future applications in biomedical and industrial contexts².

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POSTERS PRESENTATION

SECTION II

Food Technology

Food Engineering

Food Chemistry, Nutrition

Food Quality and Food Safety

Agrotourism Management

Sustainability

PP1. AI IN THE BOTTLE: DESIGNING TARGETED WINE MARKETING CAMPAIGNS FOR YOUNG CONSUMERS

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Abstract

In recent years, wineries around the world have faced increasing challenges connecting with younger audiences, particularly those who don't traditionally associate wine consumption with social enjoyment or memorable experiences. Therefore, our goal was to facilitate and increase the creation of innovative marketing campaigns in the wine sector to attract young audiences through creative ideas, relatable language, and digital strategies tailored to their tastes.

Recognizing this need to connect with young audiences, we proposed a novel solution: the development of an AI-based chatbot designed to help wineries design marketing campaigns specifically tailored to attract a younger audience. The model, developed with the ChatGPT platform, can generate creative and personalized content for social media, such as podcast scripts, Instagram reel-style videos, or viral posts. It also offers suggestions for themed events, such as Christmas, Valentine's Day, or festivals, which offer great opportunities to close big sales. The activities were conducted in person, with the participation of 25 students from different universities, who acted as four test groups and content creators. Participants worked on the ideation and simulation of advertising campaigns aimed at young wine consumers, focusing specifically on label design and its relationship with marketing, guided by innovative trends such as the use of chatbots.

As a result, we found that the majority of students who had not used AI for marketing before agreed that using artificial intelligence facilitates and improves the work behind wine marketing campaigns.

The simulation we conducted demonstrates that this technology can help the wine sector modernize digitally, encouraging greater participation among young audiences.

Acknowledgment: The processed data constitute a component of the project "Joined by wine – designing future 2024-2025."

PP2. STUDIUL LITERATURII DE SPECIALITATE PRIVIND MULTIPLELE UTILIZĂRI ALE PLANTEI DE TUTUN (NICOTIANA TABACUM)

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Abstract

Această lucrare explorează multiplele utilizări ale plantei de tutun (*Nicotiana tabacum*)¹, dincolo de binecunoscuta sa întrebuințare în industria tutunului pentru fumat.

Se pune accent pe potențialul său valoros² în domenii precum industria farmaceutică, unde este folosit ca platformă pentru producerea de proteine recombinante și vaccinuri, precum și în cercetarea genetică⁶, unde joacă rolul unui model experimental. Un alt aspect abordat îl constituie tutunul ca sursă alimentară alternativă⁵ – cu frunze bogate în proteine³ – și ca sursă de substanțe bioactive cu efect insecticid³, fiind utilizat în agricultură.

Totodată, lucrarea evidențiază contribuția semnificativă a tutunului la progresul geneticii vegetale, în special prin dezvoltarea tehnicilor de androgeneză și a culturilor „in vitro”⁴. Aceste metode biotehnologice au permis obținerea unor soiuri omologate.

Lucrarea oferă o perspectivă științifică asupra versatilității acestei plante controversate, scoțând în evidență valoarea sa științifică, agricolă și biotehnologică. Această abordare este completată de aplicarea unui chestionar structurat, conceput pentru a analiza percepțiile actuale ale publicului cu privire la utilizările alternative ale tutunului, dincolo de consumul tradițional prin fumat. Chestionarul a fost aplicat unui eșantion diversificat de respondenți, vizând aspecte precum cunoașterea potențialului medicinal, industrial și biotehnologic al plantei, atitudinea față de inovațiile pe bază de tutun și deschiderea față de utilizările viitoare sustenabile. Datele obținute au contribuit la consolidarea argumentelor științifice și au oferit o imagine de ansamblu asupra nivelului de informare și acceptare socială a acestor utilizări.

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PP5. SAVOR THE FUSION: ROMANIAN DISHES & SPANISH WINE CULTURE

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Abstract

Romanian culinary culture and Spanish wines, with their rich aromas and deep-rooted traditions, come together in a unique fusion that promises an exceptional gastronomic experience. In this article, we invite you to explore how flavorful traditional Romanian dishes perfectly harmonize with Spain's renowned wines. Each pairing is an invitation to explore new flavors and enjoy the rich culinary traditions of two different cultures.

In a unique collaboration between young people from Romania, Spain and Portugal, a special wine was born — one that symbolizes harmony among nations and a shared passion for quality wines. “Foreign” is the result of a study conducted through a questionnaire addressed to young consumers, which led to the creation of an extraordinary blend of Syrah, Tempranillo, and a touch of Cabernet Sauvignon. Alongside “Foreign,” other wines such as *Irreverent*, *Must Be Grapes*, and *Solstice* showcase equally bold expressions, crafted from renowned grape varieties like Tempranillo, Garnacha, Merlot and Syrah. These wines, with their intense and complex aromas, perfectly reflect the diversity and unity of our cultures.

To highlight these remarkable wines, we have selected traditional Romanian dishes that bring authentic, flavorful aromas to the table — perfectly complementing the unique character of each creation. From the bold and harmonious *Foreign* to the expressive *Irreverent*, the vibrant *Must Be Grapes*, and the elegant *Solstice*, every wine tells a story shaped by cultural diversity and shared creativity. Discover how wine and food can travel together in a symphony of flavors, bringing to the table not just a meal and a drink, but also a story of collaboration and tradition between nations.

Acknowledgment: The processed data constitute a component of the project "*JOINED BY WINE – DESIGNING FUTURE*."

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PP6. ANTHOCYANIN AND FLAVONOID PROFILING OF RED WINES: IMPLICATIONS FOR COLOR STABILITY

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ABSTRACT

The chromatic characteristics and phenolic pigment content of twelve red wine samples were evaluated with the aim of assessing their flavonoid composition, anthocyanin concentration, and color expression. The samples analyzed included wines from different vintages and producers: *IRREVERENT*, *MUST BE GRAPES*, *SOLSTICES 1* and *2*, *FOREIGN*, *VIZAR blend 2019*, *SARMENTERO Tempranillo 2023*, *DRD blend 2020*, *KOLNA Cabernet Sauvignon 2021* and *KOLNA Merlot 2023*, and two *MINIS 2012* wines (Cabernet Sauvignon and Merlot).

The flavonoid content ranged between 0.19 and 0.30 mg catechin equivalents/mL, with the highest values observed in *VIZAR blend 2019* and *DRD blend 2020*. Total phenolic absorbance at 280 nm (D280) was relatively uniform, indicating similar concentrations of aromatic phenolic compounds, with values between 3.27 and 3.59. The percentage of red coloration (%red), which reflects the proportion of color attributable to red pigments, varied significantly between samples—from only 2.25% in *VIZAR blend 2019* to 24.07% in *SOLSTICES 2*.

Total anthocyanin content, expressed as mg/L malvidin-3-glucoside equivalents, ranged from 108.68 mg/L (*MINIS 2012 Merlot*) to 445.34 mg/L (*MUST BE GRAPES*). Most samples exhibited values between 250–400 mg/L, consistent with typical concentrations in young to mid-aged red wines. Color shade values (A420/A520), used to estimate hue, ranged between 1.12 (*MINIS 2012 Merlot*) and 1.56 (*VIZAR blend 2019*), indicating a shift from red-purple to brick-red tones in some wines, likely due to aging or pigment polymerization.

Overall, the study reveals considerable variability in anthocyanin levels and chromatic indices across the analyzed wines, emphasizing the influence of grape variety, vintage, and vinification techniques on wine color and pigment retention.

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PP7. SENSORY HARMONIES: COMPARATIVE ORGANOLEPTIC ANALYSIS OF TRADITIONAL SPANISH WINES AND NEWLY CREATED BLENDS

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Abstract

This study presents a comparative organoleptic analysis of several wines varieties—Syrah, Tempranillo, Garnacha, Mencía, and Cabernet Sauvignon. The analysis was conducted within an international collaboration involving young wine enthusiasts and students from Romania, Spain, and Portugal. The project aimed to develop a new type of wine that aligns with the preferences of the younger generation, based on data collected through a dedicated consumer survey. Each wines grape variety was evaluated for its specific sensory profile—color, aroma, taste, and aftertaste—and then used in the creation of innovative blends. These new wines, including “*Foreign*”, “*Irreverent*”, “*Must Be Grapes*” and “*Solstice*”, were subjected to structured tastings and descriptive analysis, allowing a comparison between traditional Spanish styles and modern, youth-oriented blends. The results highlight both the potential of classic varieties and the creativity of new-generation winemaking, reflecting a balance between tradition and innovation.

The organoleptic analysis was carried out using a structured sensory evaluation protocol, which included both descriptive and hedonic methods. Panelists assessed key parameters such as visual, clarity, color intensity, aroma intensity, acidity, sweetness, taste complexity.

Acknowledgment: The processed data constitute a component of the project "Joined *BY WINE* – *DESIGNING FUTURE*."

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PP8. CHEMICAL FINGERPRINTING OF WINE AROMAS VIA LIQUID-LIQUID EXTRACTION AND HS-GC-MS

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ABSTRACT

Wine is a complex matrix of numerous volatile and non-volatile compounds that contribute to its sensory characteristics and overall quality. In this study, eight commercially available wine samples - *IRREVERENT*, *MUST BE GRAPES*, *SOLSTICES 1*, *SOLSTICES 2*, *FOREIGN*, *VIZAR blend 2019*, *SARMENTERO 2023*, and *DRD blend 2020*—were comparatively analyzed to determine their chemical profiles. Two complementary analytical techniques were employed: classical liquid-liquid extraction, gas chromatography-mass spectrometry (GC-MS), and headspace GC-MS (HS-GC-MS) analysis.

Following liquid-liquid extraction, GC-MS analysis led to the detection of 185 chromatographic peaks, out of which 20 compounds were successfully identified. These included a range of esters, alkanes, alcohols, and acids such as phenylethyl alcohol, diethyl succinate, 2,4-di-*t*-butylphenol, and *n*-hexadecanoic acid. Among them, diethyl succinate and *n*-hexadecanoic acid were consistently abundant across all samples, indicating their relevance in defining the aromatic fingerprint of the wines.

Complementary HS-GC-MS analysis revealed 20 peaks, of which 15 were successfully identified. Acetic acid ethyl ester and isopentyl alcohol were the most dominant volatiles, contributing significantly to the fruity and floral aromas of the wines. Differences in volatile composition between the samples were noted, with certain esters like isoamyl acetate and octanoic acid ethyl ester varying notably between wines, reflecting their diverse origins and production methods.

This comparative study underscores the importance of using multiple extraction and detection techniques for a comprehensive chemical profiling of wines. The results provide valuable insights into the characteristic compounds responsible for wine aroma and may support quality control and authenticity verification processes in the wine industry.

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PP10. COMPARATIVE EVALUATION OF DPPH, FRAP AND PHENOLIC CONTENT IN DIVERSE WINE SAMPLES

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ABSTRACT

Twelve commercial wine samples' antioxidant potential and total phenolic content were evaluated using DPPH radical scavenging activity, ferric reducing antioxidant power (FRAP), and Folin–Ciocalteu assay. The samples included wines from different producers and vintages: *IRREVERENT*, *MUST BE GRAPES*, *SOLSTICES* 1 and 2, *FOREIGN*, *VIZAR blend* 2019, *SARMENTERO Tempranillo* 2023, *DRD blend* 2020, *KOLNA Cabernet Sauvignon* 2021 and *KOLNA Merlot* 2023, and two *MINIS* 2012 varieties (Cabernet Sauvignon and Merlot).

The DPPH inhibition percentage ranged between 80.86% (*DRD blend* 2020) and 85.99% (*MINIS* 2012 Merlot), with most samples showing values above 82%, indicating a generally strong free radical scavenging capacity. FRAP values, expressed in mM Trolox/mL, varied from 0.371 to 0.390, with *KOLNA Merlot* 2023 showing the highest ferric reducing capacity (0.390 ± 0.0007 mM Trolox/mL).

Total phenolic content ranged from 1.67 ± 0.02 mg GAE/mL (*IRREVERENT*) to 3.21 ± 0.00 mg GAE/mL (*KOLNA Merlot* 2023). A positive correlation was observed between the total phenolic content and both antioxidant assays, supporting the contribution of phenolic compounds to the overall antioxidant capacity of wines.

These results highlight the variability in antioxidant potential among different wine samples and underline the influence of variety, vintage, and producer on the phenolic profile. The data support the use of multiple complementary assays to evaluate wine antioxidant properties comprehensively.

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PP12. SHORT-TERM AIR QUALITY ASSESSMENT IN THE URBAN CENTER OF ARAD: DIURNAL TRENDS AND POLLUTION INDICATORS

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This study presents the results of a short-term air quality monitoring campaign conducted in the central area of Arad city on May 13–14, 2025. The monitored parameters included ambient temperature, relative humidity, formaldehyde (HCHO), total volatile organic compounds (TVOC), particulate matter (PM_{2.5}, PM_{1.0}, and PM₁₀), and a calculated Air Pollution Level index. Measurements were taken hourly from 7:00 to 20:00, capturing both diurnal and early evening variations in air quality. Temperatures ranged from 13°C to 26°C, while relative humidity varied between 22% and 47%. HCHO concentrations remained relatively stable, between 0.031 and 0.079 g/m³, and TVOC values ranged from 0.171 to 0.338 g/m³. PM_{2.5} concentrations fluctuated modestly, with peak values of 20 µg/m³ recorded during the morning of May 14. Air Pollution Levels remained within low to moderate thresholds, with the highest level (21) occurring in the late afternoon. The data reveal a clear daily cycle in pollutant levels, likely influenced by traffic intensity and atmospheric conditions. Pollution indicators tended to rise during morning and early evening hours, corresponding to typical urban activity peaks. These findings highlight the importance of continuous air quality monitoring in urban centers to inform public health strategies and urban planning policies.

Keywords: Air quality, Arad city center, diurnal variation.

PP13. EVALUAREA IMPACTULUI DE MEDIU ȘI A POLUĂRII FONICE ÎN TIMIȘOARA: PROVOCĂRI ȘI SOLUȚII

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Poluarea fonică a devenit una dintre cele mai presante probleme de mediu în orașele europene, afectând sănătatea fizică, mentală și echilibrul ecosistemelor urbane. Potrivit Agenției Europene de Mediu, unul din cinci cetățeni ai Uniunii Europene este expus zilnic la niveluri de zgomot considerate nocive pentru sănătate [1]. Raportul acesteia evidențiază legătura dintre expunerea cronică la zgomotul rutier și riscul crescut de boli cardiovasculare, tulburări de somn și stres psihologic [1]. În plus, cercetările asupra costurilor sociale ale poluării fonice atrag atenția asupra implicațiilor economice, care afectează productivitatea, sistemele de sănătate publică și calitatea generală a vieții [2].

Pe baza acestor perspective europene, proiectul de față include o cercetare aplicată asupra situației din municipiul Timișoara. Un chestionar structurat a fost aplicat unui eșantion de 40 de persoane, urmărind percepția asupra surselor de zgomot, efectelor asupra sănătății și măsurilor de reducere. Rezultatele confirmă predominanța traficului auto ca sursă principală de disconfort acustic, iar respondenții au raportat frecvent tulburări de somn, iritabilitate și dificultăți de concentrare[3]. Lucrarea propune măsuri precum extinderea spațiilor verzi, instalarea de panouri fonoabsorbante și optimizarea infrastructurii pentru reducerea zgomotului urban, contribuind astfel la un cadru sustenabil pentru viitorul orașelor românești.

Referințe:

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[3] Bucșă Sorin, Țigan Eugenia – „Evaluarea impactului de mediu prin sistemul indicatorilor comuni europeni - evaluarea impactului de mediu și a poluării fonice în Timișoara”.

PREZENTARE PRODUS: BULZ DACIC

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Și Protecția Mediului*

Scopul acestui studiu a fost de a crea un produs nou, autentic, cu origini bine definite pentru a putea obține un produs inovativ, care prin procesul de fabricație să păstreze caracteristicile generale din industria alimentară.

Am obținut acest produs plecând de la o rețetă simplă, la care am adăugat miez de nucă și am valorificat un subprodus: cojile de usturoi.

Combinația dintre făina de mei, brânză, miez de nucă și cojile de usturoi, ambalate într-o membrană poliamidică, îi aduce acestui produs nou, atât valoare nutritivă, dar și o valoare inocuitivă.

Acest produs prototip poate fi considerat o variantă alimentară ce poate fi produsă industrial.

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NOTES: Abbreviations: OP = oral presentation, PP = poster presentation.