BOOK OF ABSTRACTS

International Summer School
FOOD SAFETY AND HEALTHY LIVING
FSHL – 2023

ON SITE and ONLINE

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FOOD SAFETY AND HEALTHY LIVING – FSHL 2023

C1 HEALTHY LIVING CONSIDERING FOOD SAFETY

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Healthy living includes good principles for a healthy lifestyle and introducing and maintaining habits that improve health. The main directions for healthy living are related to eating a well-balanced diet, food safety, mental wellbeing, contraception, immunisation or living a happier life.

The 6th edition of the International Summer School - FOOD SAFETY AND HEALTHY LIVING – FSHL 2023 - brings together academic staff from different countries (Romania, Italy, France, Slovenia, Portugal, Republic of North Macedonia, Albania) with research interests in the field of healthy nutrition, methods used for food characterisation, beneficial and toxicological and other connected topics.

Starting as an objective of the CEEPUS project – "Food Safety for a Healthy Living", coordinated by Transilvania University of Brasov, the idea of organising an international summer school has been continued yearly since 2018.

The main objective of the summer school FSHL 2023 is to provide multidisciplinary knowledge on food quality and food diversity for a safe and healthy life. Topics deal with important approaches to basic sensory processing – from chemical senses to different types of sensors and biosensors used in the detection of food components and a weapon in the fight against antimicrobial resistance, nutrition benefits in patients with different chronic conditions and infertility, natural compounds important for their anticancer benefits, in dermatology, as well as the importance of vitamin D for children and not only.

The undergraduate and postgraduate (master and PhD) students coming from different universities from Romania (Brasov, Bucharest, Galati, Targu Mures, Cluj-Napoca, Sibiu), Slovenia, Italy, Republic of North Macedonia, Albania, Croatia, Turkey will join this summer school with high expectations and with avidity for identifying new approaches in the field of healthy nutrition and food safety.

Keywords: food safety, healthy living, nutrition, detection

Elena Laura GAMAN

- Associate Professor, Department of Biochemistry, Faculty of Medicine, „Carol Davila" University of Medicine and Pharmacy Medicine
- PhD (2006) in Pharmacy, „Carol Davila" University of Medicine and Pharmacy

Relevant activities in the field of the thematic area

She successfully coordinated conferences and International Scientific Committees - *New Trends on Sensing-Monitoring - Telediagnosis for Life Sciences* - NT SMT-LS 2022, NT SMT-LS 2020, NT SMT-LS 2018, NT SMT-LS 2017. Dr. Gaman was chairing the organisation of International Summer Schools - Food Safety and Healthy Living –FSHL 2018-2022 (every year).

Research interests

The main research interest is the oxidative stress associated with different diseases: mitochondrial disease in children, atherosclerosis and cardiovascular disease, neurological disease like schizophrenia and Alzheimer's, diabetes, and chronic renal disease.

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Mihaela BADEA

- Professor of Biochemistry, Laboratory techniques, Organic chemistry, Analytical chemistry, Methodology of scientific research at Faculty of Medicine, Transilvania University of Brasov, Romania
- Habilitation in Medicine (2017) - University of Medicine and Pharmacy Carol Davila from Bucharest
- PhD in Chemistry (2005) - Babes-Bolyai University of Cluj-Napoca
- PhD in Medicine (2021) – Transilvania University of Brasov
- Member of the Academic Nutritional Science PhD's staff of the University of Milan (Italy) (since 2019).
- Nov. 2019 – Coordinator Research Center for Fundamental Research and Preventive Strategies in Medicine -ICDT UNITBV
- Coordinator of Clinical Laboratory, undergraduate specialisation (3 years), Faculty of Medicine, Transilvania University of Brasov

Relevant activities in the field of the thematic area

The senior researcher has previous managerial experience in coordinating national grants and acting as Romanian coordinator for an international FP7 project (PlantLIBRA - KBBE-2009 -245199), as well as team member in international projects (funded by Balkan Environmental Associations- COSMOTE) and national projects.

She successfully coordinated conferences and International Scientific Committees - EnvEdu2005, *New Trends on Sensing-Monitoring- Telediagnosis for Life Sciences* - NT SMT-LS 2022, NT SMT-LS 2020, NT SMT-LS 2018, NT SMT-LS 2017, NT SMT-LS 2015, NT SMT-LS 2014; *Healthy Nutrition and Public Health* - IC-HNPH 2011; *Analytical and Nanoanalytical Methods for Biomedical and Environmental Sciences*- ICANMBES 2010. Dr Badea was chairing the organisation of International Summer Schools - *Food Safety and Healthy Living* – FSHL 2018-2022 (every year); *Telemonitoring and Telediagnostic for Life Sciences* – TTLS 2013; *Bioanalytical Methods for Life Sciences* – BMLS 2011.

Research interests

- Development and optimization of bioanalytical methods with applications in the life sciences
- Studies on the involvement of antioxidant systems in different biochemical mechanisms
- Correlation of environmental factors with chronic diseases
- Toxicological studies for the detection of contaminants in different environments
- Studies of herbal dietary supplements – composition, safety, beneficial effects, consumer profile
- Telemonitoring-telediagnosis in life sciences
- Biocompatibility studies for new biomaterials

RESEARCHER ID: Z-1490-2018
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SELECTED PUBLICATIONS

- **Badea M**, Gaman L, Delia C, Ilea A, Leașu F, Henríquez-Hernández LA, Luzardo OP, Rădoi M, Rogozea L., (2019), Trends of lipophilic, antioxidant and hematological parameters associated with conventional and electronic smoking habits in middle-age Romanians., J Clin Med.;8(5). pii: E665
- Majdinasab M, **Badea M**, Marty JL. (2022), Aptamer-Based Lateral Flow Assays: Current Trends in Clinical Diagnostic Rapid Tests. Pharmaceuticals (Basel). 15(1):90. doi: 10.3390/ph15010090.
- Fan H, Gao X, Wang H, Idomir M, Rogozea L, Cazan AM, Bidulescu A, **Badea M,** (2020) Disparities of perceived wellness by smoking and professional status among young individuals in Brasov, Brasov County, Romania, Sage Open Medicine, 8, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7686610/ WOS – 594782400001
- Miccoli A., Restani P., Floroian L., Taus N., **Badea M**., Cioca G., Bungau S., Sensitive electrochemical detection method of melatonin in food supplements, REV.CHIM. (Bucharest), 69, No. 4, 2018, 854-859
- **Badea M**, Luzardo OP, González-Antuña A, Zumbado M, Rogozea L, Floroian L, Alexandrescu D, Moga M, Gaman L, Radoi M, Boada LD, Henríquez-Hernández LA., Body burden of toxic metals and rare earth elements in non-smokers, cigarette smokers and electronic cigarette users., Environ Res. 2018;166:269-275.

C2 THE LABORATORY - PARTNER OF THE CLINICIAN IN THE DIAGNOSIS OF GASTROINTESTINAL DISEASES

Antoanela CURICI (1,2)

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Digestive disorders are among the most frequent health issues. Up to 20% of people in developed countries have experienced an abnormal response to food ingestion also known as, an adverse reaction to food. The classification of adverse food reactions depends on the mechanism: immunologic or nonimmunologic. A nonimmunologic reaction, often known as food intolerance, refers to a variety of reactions that are primarily caused by a person's inability to digest a dietary component. Immunological mechanism entails an immune response that is classified as IgE mediated, non-IgE mediated, or cell mediated depending on the underlying immunopathophysiology. Multiple immunological pathways are involved in some chronic allergic reactions.

The gastrointestinal infections define a variety of disorders with bacterial, viral, or parasite causes. Due to the widespread diversity of pathogenic bacteria and the common clinical symptoms of gastrointestinal infections, determining a precise etiology for these conditions can be difficult. In order to deliver the proper and targeted therapy, a molecular diagnostic enables the simultaneous detection of multiple kinds of pathogens from a single stool sample.

In conclusion, we can state that the laboratory is a dependable partner in making the right diagnosis so that a proper and focused treatment may be given.

Keywords: adverse food reaction, infections, molecular tests, intolerance

Antoanela CURICI

- Laboratory Medicine, MD
- PhD (2015) in Medicine - Cellular biology and Histology, "Carol Davila" University of Medicine and Pharmacy Bucharest
- Assistant Professor, Department of Cellular and Molecular Biology and Histology, Faculty of Medicine, "Carol Davila" University of Medicine and Pharmacy Bucharest
- Medical Director, Synevo Romania

RESEARCHER ID: GOJ-8939-2022

Research interests

Main research interests are clinical chemistry, hematology, molecular biology and genetic disease - correlations between the presence of different polymorphism and clinical aspects. Also improving quality in clinical laboratories, by implementing and monitoring specific indicators.

SELECTED PUBLICATIONS

- Stroe R., Mambet C., **Curici A**., Ivan F., Alexa L., Morjan C, Lazar V., Bleotu C. The prevalence of hrHPV in a significant cohort of Romanian women. Romanian Biotechnological Letters 10.26327/RBL2018.197.
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C3 NUTRITIONAL ASSESSMENT IN ADVANCED LIVER DISEASE

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Cirrhosis is a liver chronic disease characterized by progressive liver damage with altered structure and function. Malnutrition is a common and significant complication in these patients. There are several factors that contribute to malnutrition in cirrhosis, including reduces nutritional intake, impaired absorption of nutrients, altered metabolic state, and increased nutritional requirements.

Nutritional assessment tools, although there are not well stated protocols, include anthropometric measurements, biochemical markers, dietary assessments, and subjective global assessment (SGA).

Anthropometric measurements, such as body mass index (BMI), mid-arm circumference, and skinfold thickness, body composition and phase angle bioimpedance, calculation of computer tomographic aria of psoas muscle (L3 projection) provide useful insight into patient's body composition and nutritional status. Biochemical markers, including serum albumin, prealbumin, transferrin offer objective indicators of nutritional deficiencies and inflammation. Early identification of malnutrition in cirrhotic patients is essential for timely intervention and improved clinical outcomes. Nutritional assessment provides valuable tool to identify patients at risk, design individualized nutrition plans, and monitor the effectiveness of interventions. Further research is needed to refine and validate nutritional assessment methods specifically tailored for cirrhotic patients, considering the specific challenges associated with advanced liver disease.

Keywords: cirrhosis; nutritional state; malnutrition; body composition

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- Project manager
- Primary physician Gastroenterology, Competence Diagnostic and therapeutic digestive endoscopy and general ultrasound
- PhD in medical sciences

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SELECTED PUBLICATIONS

- **Bucurica S**, Gaman L, Jinga M, Popa AA, Ionita-Radu F. Golgi Apparatus Target Proteins in Gastroenterological Cancers: A Comprehensive Review of GOLPH3 and GOLGA Proteins. *Cells*. 2023; 12(14):1823. https://doi.org/10.3390/cells12141823
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C4 FUNCTIONAL FOOD COMPONENTS, DYSBIOSIS IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE AND CANCER

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Inflammatory bowel diseases (IBD) are characterized by a chronic inflammatory process that affects the intestinal barrier structure. Recent evidence suggests that some food components can influence the integrity of the intestinal barrier and thus its permeability. IBD is characterized by a chronic inflammatory process of the gastrointestinal tract and is marked by a disruption of the intestinal barrier with symptoms which vary from constipation, flatulence, diarrhea, reflux. In this study we wanted to see what influence certain groups of functional foods have on the intestinal flora.

Keywords: inflammatory bowel disease; dysbiosis; functional foods, dietary therapy, food restriction, cancer

Camelia RÂTEA

- Carrying out activity: Pronutrition Prevention Center Romania
- Phd. candidate Biology and Human Physiology
- Nutritionist and Dietician, Specialist in Clinical and Community Nutrition
- Engineer in food research
- Phytotherapist RO
- Master's Degree Expert in food, drug and environmental quality control UMFST Tg-Mureș
- Master's Degree Clinical Laboratory UMFST Tg-Mureș

Competences

- Cancer Genomics and Precision Oncology Harvard Medical School USA
- New therapies in chronic inflammation, autoimmunity and allergies Harvard Medical School USA
- Medicinal Cannabis & CBD Oil Center of Excellence UK
- The human microbiome Wageningen University in the Netherlands
- Cancer Biology Johns Hopkins University USA

Membership

- Vice President Pronutriție Mureș Association
- National member of the College of Dietitians from Romania
- Member of the European Society of Medical Oncology EU
- Member of the European Society of Clinical Nutrition and Metabolism

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C5 NEW TRENDS IN URIC ACID ELECTROANALYSIS

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Considering the increasing incidence of hyperuricemia and oxidative stress-related diseases, quantification of uric acid has become essential. Therefore, medical professionals are looking for easy, rapid and sensitive devices for measuring uric acid.

Given those aspects, the field of bioanalysis is evolving proportionate to the necessity of rapid sensing of many metabolites, including uric acid. Due to the numerous categories of (bio)sensors available, choosing the appropriate one is a challenge.

The aim of this study is to review the scientific information concerning the most suitable (bio)sensors for quantification of uric acid, regarding its configurations and materials. Also, this study includes a comparison of sensors according to their interference behavior and sensitivity, offering an objective perspective for identifying devices that are suitable for clinical applications.

Keywords: chemosensors; biosensors; nanocomposites; clinical applications

Ligia CHELMEA

- Assistant professor, teaching Biochemistry at Transilvania University of Brasov, Faculty of Medicine
- PhD student at Transilvania University of Brasov
- Resident doctor at Pulmonology and Infectious diseases clinical hospital from Brasov, in infectious diseases specialty.

Research interests
The main field interest is medicine - infectious diseases, but also, I developed an interest in analytical chemistry and electrochemistry being student at Faculty of Medicine from Brasov, and I have worked in this field since then. Moreover, I am taking part of a food policies project and a project regarding cells cultures.

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SELECTED PUBLICATIONS

- **Chelmea L.**, Badea M., Scarneciu I., Moga M.A., Dima L., Restani P., Murdaca C., Ciurescu D., Gaman L.E. New trends in uric acid electroanalysis. Chemosensors. 2023; 11(6):341. https://doi.org/10.3390/chemosensors11060341.
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C6 ASPECTS REGARDING THE SUPERIOR VALORIZATION OF MARINE BIOMASS IN HUMAN NUTRITION

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The paper presents the results of the research carried out for using seaweed Saccharina Latissima and hidrolised fish protein in the recipes of bakery products, in the frame of SuMaFood project (www.sumafood.eu).

The ingredients were included separately in bread recipes, with replacement degrees of wheat flour of 0%, 1.5%, 3 %, 4.5%, 6%. The results showed great nutritional potential, given the high value of fish proteins, as well as the high fiber and minerals content in the case of the algae used. The rheological and enzymatic analyzes (ICC173 standard) showed very good baking characteristics in the case of additions of a maximum of 3% algae, or 4.5% of hydrolyzed proteins. The sensory evaluation of the bakery products showed a pronounced after-taste in the case of fish protein, which limited the addition to a value of 1.5%. In the case of algae, consumers penalized the sour, salty and bitter taste of bakery products with the addition of 4.5% and 6%.

Textural analyzes of showed an increase in firmness and gumminess over time and with increasing algae addition; in the case of fish protein, an increase in firmness and a decrease in cohesiveness were observed over time and with increasing protein addition.

Keywords: Saccharina Latissima seaweed, fish protein hydrolisated, bakery products.

Liviu GACEU

Liviu Gaceu is professor at Transilvania University of Brasov, Faculty of Food and Tourism and coordinator of the research center: **"Ecobiotechnologies and equipment for food and agriculture".**
Promoter of design research for hygienic purposes of equipment in the food industry, the implementation of agro-food sanogenesis, gastronomic engineering and sustainable mountain agro-tourism. Scientific researcher gr. 1 at the **Romanian Academy - INCE/CE-MONT Center** and associate researcher at the Agro-Zoo-Forestry Biodiversity Center - CSCBAS, with complex activities to promote the food product from the mountain areas of Romania;
Studies and innovation activities of the agri-food field in Romania through the national implementation of the European concepts of: "hygienic design" (as president of **EHEDG - Romania**). Special activities regarding increasing food safety and security as a **Global Harmonization Initiative** ambassador.
Implementation activities of ICT concepts in the agri-food field as president of ROSITA (**Romanian Society for ICT in Agriculture, Food, Environment and Tourism**).

From 2005: editor-in-chief of the **Journal of EcoAgriTourism** (ISSN: 1844-8577), indexed in international databases CABI, Global Health, EBSCO, etc., indexed CNCSIS category B+ (http://rosita.ro /jeat/).

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SELECTED PUBLICATIONS

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C7 THE IMPORTANCE OF FISH IN HUMAN NUTRITION WITH SPECIAL EMPHASIS ON ESSENTIAL FATTY ACIDS

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Fish is one of the most important foods in the human diet because of its high nutritional value. The chemical composition of fish varies widely and these variations are determined by many factors such as fish species, life cycle, feeding habits, and environmental conditions.

The main component of fish is water, which consists of about 80 % of the weight of fresh fish. Fish is an excellent source of high-quality proteins, particularly the essential amino acids lysine and methionine. Fish is a good source of almost all the minerals present in seawater and the value range from 0.4 to 1.5%. The mineral present in fish includes iron, calcium, zinc, phosphorus, selenium, fluorine, and iodine. Fish is a great source of vitamins. Fish oil is a rich source of vitamins A and D, which are important in the growth and development of children. Whitefish is a good source of B vitamins. The lipid content varies depending on the fish species and usually ranges from 0.2 to 25%. Fish lipids are known to provide high contents of important components for the human diet, such as nutritional lipid-soluble vitamins (A and D) and essential fatty acids omega-3 polyunsaturated fatty acids (PUFA) that have shown a positive role in preventing certain human diseases. Fatty acids are natural components of fats and oils. Based on their chemical structure they are classified into three groups: saturated, mono-unsaturated, and poly-unsaturated fatty acids. Fish are a well-known source of a group of polyunsaturated fatty acids (PUFAs) especially omega-3 and omega-6, that can prevent many diseases. Both are considered essential fatty acids because they cannot be synthesized by humans therefore must be obtained from diet or supplementation. The American Heart Association recommends eating fish at least two times per week as part of a healthy diet because fish is rich in proteins, vitamins such as D and B2 (riboflavin), omega-3 fatty acids, calcium, phosphorus and a great source of minerals, such as iron, zinc, iodine, magnesium, and potassium.

Keywords: fish, nutrients, health, fatty acids

Dijana BLAZHEKOVIKJ - DIMOVSKA

Work experience

- From 2023 - present Full Professor at University St. "Kliment Ohridski", Faculty of Biotechnical Sciences, Bitola, Macedonia
- 2019 - present Vice-Dean for Science and International Cooperation & Departmental Erasmus Coordinator
- 2018 - 2023 Associate Professor
- 2013 - 2018 Assistant Professor
- 2007 - 2013 Teaching Assistant

Education

- 2009 - 2013: PhD in Biotechnical Sciences (Title: Parasite fauna and mycoses in cyprinid fish in the fish breeding facilities in the Republic of Macedonia)
- University "St. Kliment Ohridski", Faculty of Biotechnical Sciences, Bitola, Macedonia
- 2005 - 2009: MSc in agricultural sciences (Technological microbiology)
- University "St. Cyril and Methodius", Faculty of Agricultural Sciences and Food, Skopje, Macedonia
- 2000 - 2004: Bachelor for processing animal products
- University "St. Kliment Ohridski", Faculty of Biotechnical Sciences, Bitola, Macedonia

Teaching

First cycle of studies:

- Quality and safety of fish and fish products
- Hygiene and safety in aquaculture
- Fish technology
- Fisheries
- Aquaculture
- Environmental Protection

Second cycle of studies:

- Hygiene and safety in aquaculture
- Modern technologies in aquaculture

Third cycle of studies:

- Technology of fish processing and conservation
- Contemporary trends in freshwater fisheries

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C8 VALORIZATION APPROACHES OF BIOACTIVE COMPOUNDS RECOVERED FROM BY-PRODUCTS OF OLIVE OIL INDUSTRY AND THEIR APPLICATION AS FUNCTIONAL INGREDIENTS IN FOOD MATRICES

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Olive oil production using three-phase and two-phase decanter systems generates different by-products such as olive mill wastewater and pomace which have an environmental, social and economic significance in the olive producing countries.

By-products of olive oil industry still contain high-added value compounds, so their extraction would convert them into excellent low-cost sources of bioactive compounds such as polyphenols, carbohydrates, fibres, and pigments, among other. These compounds are known to be associated with beneficial effects on human health and play an important role in food fortification, increasingly a valued features by the consumers who in the last decades are more aware about the role that the diet plays in health what has led to an increase in the demand for natural and sustainable functional ingredients and products.

Recovery of valuable ingredients from olive oil by-products by applying different innovative extraction techniques is a great challenge and an excellent economic opportunity for olive oil sector and also lowers the environmental charge of their wastewater discharges.

This lesson aims to point out valorization approaches of olive oil by-products industry and gives an overview on the extraction of valuable ingredient, focusing on the most effective ones (phenolic compounds) for their applications in the field of innovative functional foods.

Keywords: phenolic compounds, extraction processes, recovery methods, food formulation

Ariola DEVOLLI

- Associate Professor at Department of Chemistry, Faculty of Biotechnology and Food, Tirana Agricultural University, Street Pajsi Vodica, Koder-Kamëz, Tiranë, Albania
- PhD (2011) in Food Engineering (Food safety), Industrial Chemistry Department, Faculty of Natural Sciences, University of Tirana, Albania
- Team leader of research group "Inorganic and Analytical Chemistry"

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Research interests

Her main research interests are on:

- Food industry by-products valorisation, food formulation and technology
- Physico-chemical analysis, migration of heavy metals in food products, quality and shelf life of food products
- Quality assessment of wastewater discharges from food industry and their environmental impact
- Minimization of environmental pollution through green chemistry and circular economy concepts

During her experience in food industry and in academic field she has been participated in 40 International Conferences and has published 30 research articles in national and international journals.

Ariola Devolli has participated as an expert or member in several national and international research projects related to environment and food safety issue, founded by European Union, UNDP, GIZ, ReLOaD etc. She currently is coordinator of a bilateral Albania-Kosovo project entitled *"Evaluation of Monitoring Indicators related to Quality of Wastewater Generated from Agri-Food Industry"* 2021-2023, financed by Albania National Agency for Research and Innovation (NASRI).

SELECTED PUBLICATIONS

- **Ariola Devolli,** Edlira Shahinasi, Merita Stafasani (2022) "Current situation of waste management generated from Albanian agri-food industries" 11th International Conference on Business, Technology and Innovation. Proceeding book ISBN 978-9951-550-82-6, pp14-21.
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C9 INCREASING CONSUMER AND BUSINESS AWARENESS ON HEALTH EFFECTS AND ENVIRONMENTAL IMPACT OF REHEATED COOKING OIL AND ITS USE AS AN ALTERNATIVE SOURCE ON BIO-BASED PRODUCTS

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Edible oils are main source of unsaturated and saturated fatty acids and vitamin E in human diet. They are used in frying process which is a process based on dehydration of food immersed in hot oil. Frying is considered a rapid and easy method to preserve the food as the result of microorganism distraction from thermal processes and the reduction of water activity on food surface. It creates unique flavour and texture in fried products making them popular to consumers of all ages.

Despite special properties that this process gives to food, frequent reuse of heated oil compromise the food characteristics, and can demonstrate adverse health effect for the consumer due to degradation degree of the oil.

Studies have shown that prolonged consumption of products resulting from reheated oil increases blood pressure and total cholesterol, cause vascular inflammation, develop the cancer, decrease liver and kidney size etc.

Furthermore, inadequate management of reheated cooking oil (waste cooking oil) may result in environmental pollution.

In these contexts, consumer and business awareness need to be increased on the aspect of consumption, frequent replacement, handling and recycling of reheated oils in bio-based products, which are environmental and economic options for households and businesses that use large quantity of oil.

Keywords: waste cooking oil, chemical changes, recycle, eco-friendly products

Edlira SHAHINASI

Edlira Shahinasi has been graduated in 2002 as Chemical Engineer and in 2006 she got Master Degree at the Faculty of Natural Sciences, University of Tirana. In 2019 she got PhD in food safety at Agricultural University of Tirana. She has experience in teaching and research in food safety and environmental issues. During her academic research she has published several articles in national and international journals.

Research interests
The main research interest is focused on pesticide residues in food.
She is involved as expert in several research and education projects in the field of food safety and environmental protection and sustainability.

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SELECTED PUBLICATIONS

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Armida ALIKAJ

Armida Alikaj is a dynamic co-founder of Albania's non-governmental organization, "Social Development Investment" (SDI). With a rich background in international and national arenas, she boasts a decade-long stint in senior management across banking, micro-financial systems, and global organizations. Her professional footprint spans diverse nations like Albania, Kosovo, Sierra Leone, Ghana, Namibia, and Mozambique. Since 2017, reside in Albania, influencing as a contracted trainer at the School of Public Administration, UNDP, and National Chamber of Handicrafts. Armed with a 2002 Master's in Chemical Engineering from the University of Natural Sciences, she spearheads SDI, an altruistic force driving research and economic support, especially for women and youth, to kindle sustainable small enterprises. Through SDI, she has revolutionized value chain methodology, fostering skills, market understanding, and empowering marginalized communities.

Elias MAZLOUM

Elias Mazloum, a Lebanese entrepreneur based in Albania since 2017, boasts 20+ years of international experience. A serial entrepreneur, he co-founded "Social Development Investment," "Scouts and Destination Management Albania," and "The Gjallica International Festival." Elias excels in project management, specializing in donor-funded projects in Sub-Saharan Africa and Southeast Europe. His adeptness in circular economy, micro-lending, and micro-insurance shines through, as does his commitment to financial literacy. With a model aiding 1,500 rural micro-entrepreneurs globally, Elias fuels MSME development. A dedicated bridge-builder and culture enthusiast, he forges connections and drives positive change across continents

C10 TRANSFORMATIONS OF PESTICIDES WITHIN FOOD PROCESSING

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Agrochemicals have enabled to more than duplicate food production during the last century, and the current need to increase food production to feed a rapid growing human population maintains pressure on the intensive use of pesticides and fertilizers. Synthetic pesticides have been used for more than six decades and their consumption increases constantly worldwide. In the past, several different types of pesticides were synthesised and put into application; from organochlorine insecticides at the beginning, to organophosphorus type and lately to ryanodine type of pesticides. Although various persistent organic chemicals have been replaced by more biodegradable chemicals, contamination by legacy residues and recent residues still impacts on the quality of human food, water, and environment. From that reason future challenges in food production have to go along with production of food with better quality and with less toxic contaminants. That means further development of advanced practices to protect public health, careful risk assessment and licensing, as well as education of farmers and users in implementation of good practices for sustainable development of agriculture, fisheries, and aquaculture.

In this presentation the focus will be on UV stability and (photo)degradation of various pesticides (organophosphorus insecticides as well as neonicotinoid and ryanodine insecticides and their metabolites) in different food matrices under ultraviolet irradiation as a food preservation tool together with identification of transformation or degradation products and toxicity assessment.

Polonca TREBŠE

- PhD (1997) in Chemistry (organic chemistry), University of Ljubljana
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Polonca Trebše is professor of chemistry at the University of Ljubljana, Faculty of Health Sciences. She graduated in Chemistry in 1990 at the University of Ljubljana, Faculty of Chemistry and Chemical Technology, then she obtained her Master degree 1994 in the field of organic synthesis of heterocyclic compounds, and in 1997

received her PhD in the field of organic synthesis, all at the University of Ljubljana, Faculty of Chemistry and Chemical Technology. In 1997, she joined the University of Nova Gorica (former Faculty of Environmental Sciences), where she was employed until 2013 when she has got the position at University of Ljubljana, Faculty of Health Sciences.

Research interests

Her research and expert area include:

- studies on photochemical degradation and transport of different organic pollutants, mainly pesticides in the aquatic environment;
- Study of transformation and identification of different pollutants (UV filters, THMs) under disinfection conditions;
- Organic pollutants instrumental analysis;

Her current research findings have been published in more then 90 scientific papers in international journals with impact factor. For her research work she got several awards: Krka award for years 1995 and 1997, Zois award (national scientific award) for important achievements on the field of chemistry and ecotoxicology in 2008, and Prometheus of Science for Excellence in Communication in 2020.

Polonca Trebše lectures at the undergraduate program of Environmental Health (Chemistry, Analytical chemistry, Hazardous compounds, Chemical technologies), at the master program of Environmental Health (Sampling) as well as at interfaculty doctoral program Lifesciences (module Bioengineering in Health Sciences).

She is experienced with the management of national and international research projects, she was involved in the development of new curricula, preparation of study materials, and staff training on the academic level.

She is a member of the Slovenian Chemical Society (since 1990) and a member of the European Association of Chemistry and the Environment (since 2010). She serves as a member of the Editorial Boards: Archives of Industrial Hygiene and Toxicology (2004-2008) and Environmental Chemistry Letters (2012).

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- Tartaro Bujak I, Bavcon Kralj M, Kosyakov D, Ul'yanovskii N, Lebedev AT **Trebše, P.,** Photolytic and photocatalytic degradation of doxazosin in aqueous solution. Science of the total environment. 20 Oct. 2020, vol. 740, str. 140131-1-1401316-8, graf. prikazi. ISSN 0048-9697. https://www.sciencedirect.com/science/article/pii/S0048969720336524?via%3Dihub, DOI: 10.1016/j.scitotenv.2020.140131.
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C11 MASTICATION / FOOD PREPARATION AND COGNITIVE IMPAIRMENT

Corrado PAGANELLI (1), Teresa VALLELONGA (2), Maria Grazia PIANCINO (2)

(1) Faculty of Medicine, University of Brescia, Italy
(2) Faculty of Medicine, University of Turin, Italy

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The aim is to highlight the results of new basic and clinical research studies (more than 100 articles in the international literature in the last 5 years, all in agreement) which clearly reveal the relationship between masticatory function and memory and cognition, both during development and ageing. The results of tests, carried out in three different experimental conditions, show that the impairment of masticatory function is clearly related to a reduction in the number of neurons and the number of synapses in the hippocampus (dentate gyrus nuclei CA1 and 3) and subventricular zone. A number of clinical studies following these results have also been published.

Mechanoreceptors, cognitive decay, masticatory function during development and social aspects of nutrition / food choice-preference are important in order to better understand the impact of masticatory function on cognition. The aim is to establish a deeper understanding of the neurophysiology of mastication to improve the dental therapies and quality of life of our patients with a healthier style of life.

Corrado PAGANELLI

- Professor of Dentistry at University of Brescia, Italy, DDS, MD, Postgraduate in Orthodontics
- Chair of the Board of IFDEA (International Federation of Dental Educators and Associations) and FEHDD (Forum of European Heads and Deans of Dental Schools), Former President CECDO (Council of European Chief Dental Officers) and ADEE (Association for Dental Education in Europe) and ICD (International College of Dentists).
- Dean of dental school / clinic, and previously hygienist school and orthodontic program, Erasmus coordinator for medical school at University of Brescia – Italy.
- Past President of IADR Nutrition group.
- He also chairs the dental expert panel (Expamed) for the EU Commission of the Regulation (EU) 2017/745 on Medical
- Honorary Fellowship (since 2008) and Visiting professor (2010) at King's College of London.
- Honorary Visiting professor (since 2018) at Hong Kong University Faculty of dentistry.
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Research interests

- Cleft Lip / Palate and Down syndrome patients
- Corrosion and biocompatibility testing
- Development of mathematical model of the periodontal ligament
- Biomechanics of dental implants used in orthodontics
- Stem cells from pulp of extracted bicuspids for orthodontic reasons
- Dental Education
- Mastication, nutrition and the role in the cognitive impairment

SELECTED PUBLICATIONS

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Maria Grazia PIANCINO

- Associate Professor in Orthodontics, University of Turin-Italy
- Board and Educational Commission PhD School "Experimental Medicine and Therapy"
- Past President Nutrition Research Group IADR (International Association of Dental Research), Editorial Board Journal of Dental Research (JDR)
- Vice-president ITWIIN (Italian Women Inventors and Innovators)
- Author of more than 100 research articles peer review and of the book "Understanding Masticatory Function in Unilateral Crossbites."
- Wiley Editor 2016 and of the chapter 14 "Impact of Oral health on Diet/Nutrition" Karger editor 2019.
- Invited lecturer to more than 50 international congresses

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Research interests

- Masticatory function
- Nutrition
- Histology and Biomolecular aspects of masseter muscles
- Temporo-mandibular joint physiology and pathology
- Juvenile Idiopathic Artrhitis
- Spine posture
- Functional Orthognathodontics
- Cleft lip/palate
- Functional evaluation after Orthognathic surgery
- 3D Cephalometry

SELECTED PUBLICATIONS

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- Dental Degree,
- postgraduate in Orthodontics and
- PhD University of Turin-Italy
- Consultant pediatric Koelliker Hospital-Turin Italy
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Research interests

- Masticatory function
- Temporo-mandibular joint physiology and pathology
- Functional Orthognathodontics

SELECTED PUBLICATIONS

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C12 NUTRITIONAL TOOLS FOR INFERTILITY MANAGEMENT

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The present century is characterized by globalization (eg the manufacture of food, medicine, textiles or footwear by 3D printing, the use of artificial intelligence in more and more professional or personal fields, the use of new fuel sources, and advanced exploration of the planet Mars or undersea level). Although the average age has increased globally, simultaneously with the above characteristics, many developed countries face a Total Fertility Rate below the security threshold of 2.1, leading to the need for international immigration to secure the nation's demography. In this presentation, we want to emphasize the importance of multidisciplinary team management based on recommendations for a healthy lifestyle, personalized diet, avoiding exposures to environmental or working places obesogens and disruptors, management of stress, nutrivigilance, and food safety and sustainability as well, with the main purpose of mitigating the risk for infertility, both for men and women all over the world. Addressing malnutrition screening methods and tools, nutrigenetic/epigenetic tests and gut microbiome composition, the Mediterranean diet aspects, and dietary supplements of vitamin D, folic acid, iodine, calcium, and iron, have proven important in implementing a personalized diet plan.

Keywords: food, fertility, lifestyle, prevention

Monica TARCEA

Monica Tarcea is a Professor at the "George Emil Palade" University of Medicine, Pharmacy, Science, and Technology in Târgu Mureș, the Head of the Community Nutrition and Food Safety Department of the Faculty of Medicine. She was for 10 years the coordinator of the bachelor's programs in Nutrition and Dietetics and master's degree in Clinical and Community Nutrition at UMPhST of Targu Mures and initiator of the Romanian Dietitian Law (promulgated in 2015).

She started research in the field of prevention over 28 years ago, focusing on topics such as smoking, community nutrition, obesity, lifestyle management, prevention of non-communicable diseases, dietetics and education in schools, etc. being involved in over 20 national and international projects. Monica Tarcea has published 24 books for specialists and students and 9 practical guides, and in the field of publications he has so far 185 articles published. She was Dean of the Faculty of Medicine during 2013-2016, with expertise in Public Health, Auditor, and Manager in the quality management system, as well as Adult Trainer and Evidence-Based Nutrition Trainer.

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C13 FOREST FRUITS AND THEIR APPLICABILITY IN DERMATOLOGY

Cristina-Ștefania GĂLBĂU, Lorena DIMA, Andreea NECULAU, Marius IRIMIE, Mihaela BADEA

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During the past three decades, berries have received significant attention as a functional substance against multiple chronic disease risk factors. Anthocyanins, tannins, flavanols have exhibited antioxidant and anti-inflammatory properties in humans, dominate the phytochemical profile of these fruits.

The literature review was conducted utilizing scientific databases. Only papers written in English were considered. Using the search terms "berry" or "berries" matched with skin were retrieved.

Tradition supports the use of berries for skin protection, but pharmacological validation of numerous observations is still required. Despite the fact that a phytocomplex has beneficial effects by definition, the validation of specific targets is necessary for the clinical, nutritional, and cosmetic applications of berry extracts. This pattern of anthocyanins, flavonols, and tannins appears to contribute to the biological activity of berry extracts. To date, the mechanisms of action have been investigated primarily in fibroblasts and keratinocytes, under the assumption that all of these molecules reach these cellular populations. *In vivo* studies revealed that both topical and oral administration were promising and warrant further investigation. Injuries to the skin, such as incisions, UV radiation, and excessive inflammatory responses, can lead to chronic dermatological disorders, which need long-term treatment.

The linking of bioactivity to particular polyphenols or their metabolites is still debatable, with impure extracts typically exhibiting a more potent effect than individual compounds. The standardization of extracts and consequent human studies appear to be the two most important missing components for the development of new plant-based treatments for dermatological conditions.

Keywords: berries, forest fruits, skin disorder, dermatology, berry extract

Cristina GĂLBĂU (ADOCHIȚE)

- Bachelor degree in Clinical Laboratory, Faculty of Medicine, Transilvania University of Brasov, 2019
- Master degree in Health' Management and Policies, Faculty of Medicine, Transilvania University of Brasov, 2021
- PhD student in Medicine field, 2022-ongoing
- In present: Assistant professor at Faculty of Medicine, UniTBv

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Relevant activities in the field of the thematic area
Optimization methods in research fields such as: electrochemical detections using screen-printed sensors, the antioxidant capacity for plant extracts, antimicrobial tests for coatings and correlation of results and information with the impact on the environment and human health.

Research interests
- Public health
- Electrochemical methods
- Antibacterial tests
- Antioxidants (plants extracts)
- Characterisation of extracts (HPLC, sensors, antioxidants capacity)
- Effects of bioactive compounds on cell culture

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Marius IRIMIE

- Associate Professor, Transilvania University of Brasov, Romania
- Primary doctor in dermatology-venerology

Relevant activities in the field of the thematic area:
Researches in the field of dermatology, cosmetology, phytotherapy, mycology

Research interests include:
- Dermatology
- Venereology

- Mycology
- Cosmetology
- Phytotherapy

ORCID: 0000-0002-4757-0006

SELECTED PUBLICATIONS

- Ahmad H, Gohar UF, Mukhtar H, Zia-Ui-Haq M, Marc RA, **Irimie M**, Marceanu LG, Gavris CM. Achyranthes aspera Extracts as Adjuvants for the Redressal of Antibiotic Resistance. Pharmaceutics. 2022 Oct 18;14(10):2219. doi: 10.3390/pharmaceutics14102219.
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Lorena DIMA

- MD, Clinical Pharmacology
- PhD in Medicine
- Professor of Pharmacology, Methodology of Scientific Research and Bioethics
- Head of the Department of Fundamental, Prophylactic and Clinical Discipline
- Faculty of Medicine, Transilvania University of Brasov

Research interests

Main research interests are in the areas of neuropsychopharmacology and pharmacology of plant compounds. The topics studied include inflammatory processes and oxidative stress in the pathophysiology of psychiatric disorders and / or the adverse effects of psychiatric drugs, mainly the antipsychotics, the anti-inflammatory or antioxidant effects of some active compounds in plants, and the exploration of the therapeutic potential of active compounds from plants in neuropsychiatric disorders. Another area of interest, as a teacher of pharmacology and as a member of Education Sub-Committee of the European Association for Clinical Pharmacology and Therapeutics.

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- Dell'Agli M, Di Lorenzo C, Badea M, Sangiovanni E, **Dima L**, Bosisio E, Restani P, . Plant Food Supplements with Anti-Inflammatory Properties: A Systematic Review (I). Critical Reviews in Food Science and Nutrition 2013;53(4):403-13.
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C14 HEAVY METALS AND HUMAN HEALTH

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Heavy metal toxicity has proven to be a major problem and it can cause many diseases. This can lead to various disorders and can also result in excessive damage due to oxidative stress induced by free radical formation. The toxicity of heavy metals depends on concentration, period of exposure etc. The aim of this presentation is to highlight certain heavy metals and their impact and biotoxic effects on human being, mostly because of their ability to cause membrane and DNA damage, and to perturb protein function and enzyme activity.

Keywords: heavy metals, health, oxidative stress

Mihaela HORHOCEA (ȘTEFAN)

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● Biochemist – Convest Medical, Brasov
● PhD student – Transilvania University of Brasov, Faculty of Medicine, 2021

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Research Interests
Research activities are mainly focused on oxidative stress, antioxidants in human health.

Conferences
- Lipid peroxidation and oxidative stress, New Trends on Sensing-monitoring-Telediagnosis for Life Science, September 2022, Food Safety and Healthy Living – FSHL 2022 – Book of Abstracts
- Stresul Oxidativ si Statusul Hidric Asociate cu Activitatile Sportive (Oxidative stress and hydration status associated to physical activities, National Conference of the Romanian Association of Laboratory Medicine with International participation, september 2020; Romanian Journal of Laboratory Medicine SUPLIMENT 1 - VOL. 28, Nr. 4, OCTOMBRIE 2020 Rev Romana Med Lab ISSN 1841-6624 • ISSN online: 2284-5623

- Oxidative Stress and Biochemical Changes Associated to Physical Activity, New Trends on Sensing-monitoring-Telediagnosis for Life Science, July 2020, Food Safety and Healthy Living – FSHL 2020 – Book of Abstracts

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C15 RARE DISEASES, DIAGNOSIS AND MONITORING, A CONTINUOUS CHALLENGE

Corina DELIA (1,2), Geanina TOMA (1), Madalina VLAD (1,2), Mihaela CUTIERU (1), Michaela NANU (1), Daniela IORGULESCU (1), Florentina MOLDOVANU (1), Ioana ARDELEANU (1,3)

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The number of rare diseases (RD) is estimated at 6 000-8 000 (mostly of genetic cause) with a important medical, social and economic impact.

Neonatal screening is a public health program that consists of testing infants shortly after birth for several conditions that are treatable but not clinically evident in the newborn period. A screening result is not a diagnosis but an important indicator.

Detecting a metabolic disorder must be done as soon as possible after birth, so that therapeutic intervention and monitoring have a more compelling effect.

Telemedicine – healthcare services and information via electronic and telecommunication technologies, represents another valuable tool. This can enable the transfer of expertise and information between specialized care services, remote patient monitoring, care coordination and case management, and remote training for specialists and patients and families, ensuring greater resource efficiency.

Having an advisory role, the National Council for Rare Diseases of the Romanian Ministry of Health must assume responsibilities in carrying out specific activities, aiming at the development of the institutional framework and the implementation of the National Plan for Rare Diseases.

Keywords: rare diseases, neonatal screening, therapeutic and monitoring RD.

Corina Elena DELIA

- 2005-present Principal Biochemist at National Institute For Mother And Child Health Alessandrescu Rusescu, Bucharest, Romania
- 2000-2005 Specialist Biochimist at National Institute For Mother And Child Health Alessandrescu Rusescu, Bucharest, Romania
- 1995-2000 Biochimist at National Institute For Mother And Child Health Alessandrescu Rusescu, Bucharest, Romania
- Certificate for "Training of internal auditors for medical laboratories, in accordance with SR EN ISO 15189/2013 and SR EN ISO 19011/2011" from Accreditation Association from Romania, National Accreditation (RENAR)

Membership

- Member of professional associations: Order of Biologists, Biochemists and Chemists for the Romanian Health System
- Founding member of the Romanian Society of Free Radicals
- Member of the Romanian Immunology Society
- Member of The EFLM Academy (European Federation of Clinical Chemistry and Laboratory Medicine)

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C16 PREVENTION OF FOODBORNE ILLNESSES THROUGH TARGETED INTERVENTIONS AIMING TO CHANGE CONSUMER PRACTICES DURING COOKING AND STORING FOOD

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To prevent foodborne illnesses generated by consumer practices related to cooking and storing food, innovative devices and equipment were designed by C-Tech Innovation, Keep-it, and Arçelik, three industrial partners of the SafeConsume project.

Radiofrequency equipment that allows rapid safe defrosting (30 minutes or less) and an even temperature profile of food was designed by C-Tech Innovations from the UK to mitigate the risk associated with defrosting food at room temperature.

Indicators that constantly monitor the temperature over time and show the actual remaining shelf life of left-over food are proposed to consumers by Keep-it Technologies from Norway. Such indicators give consumers the possibility to know how long food is safe and contribute to reduce food waste too.

Reducing the time spent by a meal in the dangerous zone when cooling is possible now with the technology developed by Arçelik from Turkey. This company incorporated a smart IR sensor system on a fridge shelf to allow rapid cooling of hot meals while not allowing temperature rise of other foods stored in the fridge.

These devices and equipment are supporting consumer safe food practices.

Keywords: food safety, shelf-life, defrosting, rapid cooling

Anca Ioana NICOLAU

Anca Ioana Nicolau graduated as food technologist (1985) and obtained her PhD title in Industrial Biotechnology (1999) at the Faculty of Food Science and Engineering from the Dunarea de Jos University of Galati (UGAL), Romania. She was a Fulbright grantee in entrepreneurship education at the University of Rochester, NY, USA (2017).

Currently, professor of *Food Microbiology, Hygiene for Food Business Operators, Expertise and Food Safety,* and *Quality Audit* at UGAL. PhD thesis coordinator in the domain of Industrial Engineering, specialization Food Industry, at UGAL.
Author and coauthor of 25 books and book chapters, cca. 100 articles in scientific journals and 3 patents. Institutional responsible for 8 EU projects (Horizon 2022, ERA-NET, EFSA, FP7, FP6, COST) and project director for several national projects. Leader of Dissemination and Communication in SafeConsume project.

Awardee of the Romanian Academy, the Academy of Agricultural and Forestry Sciences (ASAS) and the Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI).
Member of EFFoST (European Federation of Food Science and Technology) and GHI (Global Harmonization Initiative), ex–vice president of AEA – the Romanian Association for Entrepreneurial Education, president of the local General Association of Engineers in Romania (AGIR - Branch Galati), expert evaluator for the European Research Executive Agency (REA), ex vice-rector of UGAL responsible with research and innovation.

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- Mihalache OA, Møretrø T, Borda D, Dumitraşcu L, Neagu C, Nguyen-The C, Maître I, Didier P, Teixeira P, Lopes Junqueira LO, Truninger M, Izsó T, Kasza G, Skuland SE, Langsrud, S, **Nicolau, AI**. 2022. Kitchen layouts and consumers' food hygiene practices: Ergonomics versus safety, Food Control, v.131, 10.1016/j.foodcnt.2021.108433
- Mihalache OA, Teixeira P., **Nicolau AI.** 2022. Raw-egg based-foods consumption and food handling practices: A recipe for foodborne diseases among Romanian and Portuguese consumers, Food Control, v.139. https://doi.org/10.1016/j.foodcont.2022.109046
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C17 CONTRIBUTION OF HIGH-PRESSURE ASSISTED TECHNOLOGIES TOWARD ACHIEVING FOOD SAFETY OBJECTIVES

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High pressure processing (HPP) is a minimal processing technology which contributes to the increase of microbial safety and prolongs shelf-life in food with heat-sensitive nutritional, sensory and functional characteristics. However, achieving food safety objectives requires often combination of HPP with other preservation methods to increase microbial inactivation efficiency, especially due to the ability of some pathogens like *Listeria monocytogenes* to recover after processing, mostly during food storage. Using hurdles as bacteriocins, essential oils or other chemical preservatives or combinations of technologies (i.e mild thermal treatment) to assist HPP could provide a better protection for consumers against food illnesses and increase reliability of the food chain.

Daniela BORDA

- 1993 - BSc, Faculty of Food Technlogy & Chemistry, "Dunarea de Jos" University of Galati
- 2002 - 2003 - Marie Curie Fellowship, Laboratory of Food Science and technology, KULeuven, Belgium
- 2005 - PhD in Food science, Faculty of Food Science and Engineering, "Dunarea de Jos" University of Galati, Romania
- 2006 - Norman Bourlaug Fellowship, Iowa State University, Ames, USA
- 2008 - 2014 – Vice-Dean of the Faculty of Food Science and Engineering, "Dunarea de Jos" University of Galati, Romania
- 2013 - Professor at the Faculty of Food Science and Engineering, "Dunarea de Jos" University of Galati Galaţi, Romania
- 2019 - Habilitation thesis, Faculty of Food Science and Engineering, "Dunarea de Jos" University of Galati Galaţi, Romania

Research interests

Food safety, high pressure processing, dairy technology, food packaging, risk assessment & Monte Carlo Simulation

SELECTED PUBLICATIONS

- Bucur, F.I., **Borda, D.**, Neagu, C., Grigore-Gurgu, L., Nicolau, A.I., 2023, Deterministic Approach and Monte Carlo Simulation to Predict Listeria monocytogenes Time to Grow on Refrigerated Ham: A Study Supporting Risk-based Decisions for Consumers' Health,

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C18 COMPARATIVE STUDY OF VITAMIN D STATUS IN CHILDREN DURING THE PANDEMIC AND AFTER THE PANDEMIC PERIOD

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Introduction: Vitamin D-Colecalciferol is a fat soluble vitamin. It is present in a few foods and is produced endogenously when ultraviolet rays from sunlight strike the skin. Vitamin D promotes calcium absorption in the gut and maintain serum calcium and phosphate concentrations. Vitamin D sufficiency prevents rickets in children and osteomalacia in adults. It help protect older adults from osteoporosis. Vitamin D deficiency can be associated with secondary hyper-parathyroidism in adults, can increase the risk of diabetes, cardiovascular diseases, autoimmune diseases and some forms of cancer. Serum concentration of 25-hydroxyvitamin D =Calcidiol, is currently the main indicator of vitamin status. It reflects vitamin D produced endogenously and that obtained from food and supplements. Circulating 1,25-dihydroxyvitamin D =Calcitriol is not a good indicator of vitamin D status because it has a short half-time, measured in hours.

Materials and methods: The analyzed serum samples were obtained by collecting in a closed system, in coagulant free blood collection tubes. The assay principle combines an enzyme immunoassay competition method with a final fluorescent detection (ELFA) to 450 nm. The intensity of the fluorescence is inversely proportional to the concentration of vitamin D antigen present in the sample.

Results:

	2018	2020	2021	2022
Total samples	2456	3931	4389	4268
Average (nmol/L)				
	2018	2020	2021	2022
0-3 years	102.07	104.32	109.83	114.09
3-6 years	76.54	83.45	86.21	87.24
6-10 years	70.28	72.12	78.05	75.4
10-18 years	61.22	64.52	68.61	65.46
>19 years	61.71	59.68	70.93	76.4

Conclusions: In our experience, the vitamin D levels in newborns and in the first months of children`s life are low. But, starting with vitamin D prophylaxis, these values are obviously improved and, finally, the average is much higher for that group compare with to the rest of the groups studied. This, once again highlights the importance of vitamin D prophylaxis. For all the years studied, there is a tendency of decrease in the average values of vitamin D, with the increasing age of patients. At the same time, there is an increase in the average values of vitamin D in 2021, compared to 2020 for all age groups analyzed. This can be

assumed to be due to the additional intake of vitamin D in the population in the context of the pandemic. The values in 2018 are, for all groups, lower. In 2022, the values are comparable with 2021.

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Professional Experience

- Immunology Laboratory - INSMC Alessandrescu-Rusescu Bucuresti 2017-present
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- The nutritional status of pregnant women (Study carried out and printed in collaboration and with the support of the UNICEF Representative in Romania by IOMC Alfred Rusescu-2005) MarLink Publishing House

C19 GONADOTROPINS IN PEDIATRIC POPULATION – CHARACTERISTICS AND PARTICULARITIES

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Introduction: Gonadotropic hormones (with stimulating action on the gonads) are represented by Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH). The plasma level of gonadotropin hormones varies with age and in women differs according to the time of the menstrual cycle. If the first transient pubertal period occurs in utero between the 10th and 24th week of gestation, minipuberty describes the transient activity specific to the activation of the HPG axis during the first 6 months of life in boys and the first 2 years in girls. Puberty is a period in which the transition to the maturation of the reproductive capacity of the adult takes place, as a result of the reactivation of the HPG axis.The hypothalamic neurons that secrete GnRH are the focus of a complex neuroendocrine network (kisspepsin, neurokinin B, dynorphin/glial cells, tanycytes, astrocytes). This neuroendocrine network works as a unit, with the final effect of achieving the pulsatile secretion of GnRH. Following this secretion, LH/FSH secretion and gonadal secretion are stimulated.

Materials and methods: The analyzed serum samples were obtained by collecting in a closed system, in coagulant free blood collection tubes.The analysis of the samples was done with the Automatic Vidas PC, using appropriate kits for this analyzer. The assay principle is an enzyme immunoassay method with a final fluorescent detection (ELFA) to 450 nm.

Results:

	GIRLS		BOYS	
	Medians mUI/mL			
	FSH	LH	FSH	LH
0-6 months	5.39	0.32	1.77	2.36
6m-2years	3.35	0.37	0.92	0.79
2-5 years	2.15	0.28	0.68	0.17
5-8 years	1.74	0.21	0.64	0.12
8-12 years	2.86	0.54	1.4	0.34
12-15 years	4.92	3.53	2.43	1.32
15-19 years	4.83	3.66	2.58	2.41

Conclusion: Because there are few alternatives for establishing reference values for gonadotropins given by the reagent manufacturers for age groups in children, our laboratory tries to establish median values for these analytes and to make comparisons with the values used in the world in an attempt to have a greater accuracy in the interpretation of the pathologies we face. In this sense, it is desired to analyze and to statistically interpret as many samples as possible, so that the obtained results can be made into a reference material.

C20 CHEMICAL AND BIOLOGICAL CHARACTERIZATION OF BIOACTIVITIES FROM NATURAL SOURCES

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Extraction techniques are usually the first step in the purification and fractionation of bioactive molecules from various plant sources. In order to study this complex process, a suitable extract must first be obtained. The most common procedure is solid-liquid extraction, where several crucial steps need to be optimised: i) the selection of the raw material, ii) the solvent, iii) the extraction device, and iv) the conditions of the extraction procedure. The solubility of bioactive molecules in different solvents plays an important role in selecting the appropriate separation and purification procedures. Once the extraction conditions are established, the extracts need to be analysed for the presence of specific molecules using different analytical techniques, namely TLC, HPLC with different detectors (e.g., MS, UV-Vis spectrophotometer, fluorimeter, refractometer), or NMR. In addition, the extracts are chemically characterized and screened for their potential bioactivities, such as antioxidant, antimicrobial, anticancer, antidiabetic and neuroprotective. These can be tested by a variety of assays, preferably in combination, ranging from simple chemistry-based models to cell culture *in vitro* or animal models *in vivo*. In the end, all bioactivities must be confirmed in human testing. The combination of all obtained results contributes to the final understanding of potential beneficial/toxic effects of the isolated molecules or their mixtures, contained in the extracts.

In this presentation, optimization of extraction procedures for bioactive molecules from invasive knotweed species (*Fallopia japonica, F. sachalinensis, and F. x bohemica*) will be presented. The results of their bioactivity (antioxidant, antimicrobial, antidiabetic and neuroprotective) will be shown along with their potential applications.

Keywords: extraction, chemical characterisation, biological activities

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Lea Pogačnik, Professor of Chemistry, Food Analytical Chemistry and Biochemistry at the Biotechnical Faculty of the University of Ljubljana, earned her bachelor's degree from the University of Ljubljana in 1995 and her Ph.D. in 2001. She has supervised more than 60 graduate students and published more than 30 research papers. She has presented more than 80 papers at scientific meetings around the world. She is a scientific editor of Sensors & Transducers and a guest editor of a special issue of the journal Antioxidants (Dietary Polyphenols and

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C21 BASICS OF SENSORY PROCESSING: THE CHEMICAL SENSES

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Olfaction and taste are part of the so-called "chemical senses" that are dedicated to the detection of chemicals in the environment. Together these systems provide a diversified information that allows the identification of things like composition, pleasance, and safety of food. It also allows the recognition of self, animals, plants, and significantly modulating the nutritional habits and social interactions among individuals.

Odorants interact with olfactory receptors found in the mucosal lining of the nose, generating action potentials that transmit the information of the chemical stimulus to central nervous system. Similarly, tastants bind to taste receptors located mainly in the tongue taste buds, leading to an action potential that travels to the insular taste cortex. Both systems recruit G protein-associated receptors that generate intracellular second messengers.

The development of artificial sensors for smell and taste is a growing field, with multiple application, from the study of the underlying mechanisms of these chemical senses, to evaluation and analysis of the quality of foods. Variations on odour and taste perception are a normal feature of ageing. However, they are recently being considered as important biomarkers for several pathologic conditions, such as the ones associated with neurodegeneration and degenerative diseases.

Keywords: olfaction, taste, signal transduction, new perspectives

Rui SILVA

Rui Silva is Professor of Histology & Embriology and of Neurobiology at Universidade de Lisboa, Faculdade de Farmácia, Portugal. He is an expert on cell biology, namely nerve cell cultures, cell signalling, cell death mechanisms and neurotoxicology. His main research interests are on the neurosciences area, in the topics of neurobiology, neurotoxicology, neurodevelopment and glial function associated to neurologic conditions and neurodegeneration. Neuroprotection mechanisms is the most relevant area of intervention embracing the neuroprotective properties of food natural products and food-borne molecules, either introduced in the regular diet or as additives or medicines, by several cell and molecular mechanisms, beyond the traditional antioxidant properties described for food polyphenols.

He has published more than 90 research articles, mentored over 30 post-graduate students, and given more than 150 communications in scientific meetings in several countries. He is an Editorial Board Member of scientific journal Antioxidants, guest editor of special issue

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C22 BIOSENSORS – AN OPPORTUNITY FOR THE FUTURE

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Biosensors are ubiquitous in biomedical diagnosis and a wide range of other areas such as point-of-care monitoring of treatment and disease progression, environmental monitoring, food control, drug discovery, forensics and biomedical research. A wide range of techniques can be used for the development of biosensors. Their coupling with high-affinity biomolecules allows the sensitive and selective detection of a range of analytes.

We give a general introduction to biosensors and biosensing technologies, including a brief historical overview, introducing key developments in the field and illustrating the biomolecular sensing strategies.

Few biosensors have reached the commercial stage. We will present the most outstanding commercial biosensors in medical field and agro-food. Some biosensors have demonstrated good performances, sometimes better than those obtained with classical methods. These devices are cheap, disposable or no, easy to use with good sensitivity, specificity and robustness. Unfortunately, they are not commercially available or their commercialization is confidential. Few companies are involved in the development of such biosensor. If the companies do not invest money in this field, it is probably because the size of the market is not very large and it is also very often very difficult to change the methods.

Keywords: enzymes, antibodies, aptamers, opto-electronical

Jean Louis MARTY

Jean Louis MARTY is Honorary Professor at the Universite de Perpignan Via Domitia and biotechonology consulting. His background is in the field of biotechnology. He has extensive experience in the domain of optical and electrochemical biosensors and bio receptors immobilization techniques. His specialization also includes but not limited to implementation of biosensors for the detection of pesticides, marine toxins, mycotoxines, drugs.... He is the founder of three companies in the field of biotechnology and biosensor. He was awarded with number of national and international projects in the field of biosensors mainly funded by European Agency projects.
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C23 RAPID DETECTION OF MYCOTOXINS – FROM RESEARCH TO APPLICATIONS

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Mycotoxins are naturally occurring toxic, small chemical compounds (MW ~700) that are produced as secondary metabolites by fungi contaminating food and feed, during crop growth or processing products. These compounds cause substantial effects on animal and human health. According to the United Nations of Food and Agriculture r Organization report, 25% of the word's food is significantly contaminated with mycotoxins.

The European Commission has set maximum levels for the mycotoxins to protect human and animal health.

The current tendency has driven the development of biosensors or bioassays as new analytical tools able to provide fast, reliable, and sensitive measurements with low cost; many of them aimed for on-site analysis. Biosensors may not completely replace the official analytical methods, but can be used both by regulatory authorities and by industry to add up the information for routine testing and screening of samples. These new technologies have been applied in quantitative analysis of various target analytes.

The classical method for the detection of mycotoxins is based on antibodies but new classes of compounds such as nanobodies and aptamers have been emerged as promising alternatives in the design of biosensors.

The presentation mainly focuses on the detection of mycotoxins using nanobodies and aptamers.

Keywords: biosensors, electrochemical, optical, aptamers

Gaëlle CATANANTE

Gaëlle Catanante is an associate professor at BAE-LBBM laboratory in Perpignan University Via Domitia since 2016. Through her involvement in international and national research initiatives, she has acquired expertise in the establishment of innovative portable devices for the detection of natural and anthropic contaminants.

Her research is focused on the implementation of optical and electrochemical biosensors based on biologic receptors including antibodies, nanobodies, enzyme and biomimetics receptors as aptamers for multi-analyte quantification in complex matrices. Her specialization also includes molecule modification and immobilization techniques essential to obtain efficient bioassays.
She shares her knowledge by working with other researchers around the world. She also supervises students from France and other countries, from bachelor's degree to doctoral studies.
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C24 ELECTROCHEMICAL SENSORS – A WEAPON IN THE FIGHT AGAINST ANTIMICROBIAL RESISTANCE

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Antimicrobial resistance (AMR) occurs when a microorganism is no longer responsive to antimicrobial medicines. According to the World Health Organization, the AMR is one of the top ten global public health threats facing humanity, because AMR makes infections harder to treat, with increasing risks of disease spread, severe illness and death [1].

Healthcare-associated infections (HAI) lead to increased costs and prolonged hospitalizations, bacteria being the main HAI cause and resistant organisms have appeared, due to excessive antibiotics use [2]. In order to be virulent, the bacteria communicate through a communication system called quorum sensing (QS) [3]. The detection of QS molecules and virulence factors with highly sensitive and selective sensors facilitates the rapid diagnosis of bacterial infections.

A wide range of electrochemical (bio)sensors have been developed for bacteria detection, owing to their many advantages: low-cost, easy functionalization, miniaturization and portability, setup simplicity [3]. Electrochemical sensor modification with nanomaterials and bioreceptors improves the method sensitivity and selectivity.

Several examples of recent (bio)sensors developed in our group for bacteria detection and their applications on real samples, an overview of the target analytes, the design and optimization of the different electrochemical (bio)sensors will be described.

Acknowledgments

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Keywords: quorum sensing; virulence factors; electrochemical biosensors; aptamers

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3. D Capatina et al. *Analytica Chimica Acta* (**2022**) 339696

Bogdan-George FEIER

Lecturer Dr. Bogdan-George Feier received his Bachelor's degree in Pharmacy in 2009 from the "Iuliu Haţieganu" University of Medicine and Pharmacy of Cluj-Napoca (UMF Cluj), Romania. In 2013, Dr. Feier defended his Ph.D. thesis, gaining a double Ph.D. diploma in Pharmacy and in Chemistry, from UMF Cluj and University Rennes 1, France (joint thesis). He has beneficiated of several research stays at University Rennes 1 and at Free University of Brussels. Dr. Feier received in 2013 and 2017 the "Young Researcher" Prize from UMF Cluj.
Dr. Feier has beneficiated of doctoral and post-doctoral research grants, he was the project director of a post-doctoral and a Young team national research grant and he is a member in several national and international research grants.

Research interests
Dr. Feier's research activity has been focusing on the development of selective and sensitive electrochemical or optical (bio)sensors, modified with chemical ligands, enzymes, aptamers, molecularly imprinted polymers applied in the pharmaceutical, biomedical, environmental field. Dr. Feier's recent research focuses on the development of (bio)sensors for antibiotic treatment monitoring and early diagnosis of bacterial infections.

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C25 DETERMINATION OF ANTIOXIDANT PROPERTIES BY SPECTROMETRIC AND ELECTROCHEMICAL METHODS. CORRELATIONS AMONG RESULTS

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Antioxidants protect cells from the damaging effect of free radicals, the main chemical species responsible for altering biological systems, causing the appearance of diseases or accelerating the aging process. They are sometimes called free radical scavengers. Certain plant-based foods specific for a healthy diet (virgin olive oil, red wine, vegetables, green coffee) are believed to have high amounts of antioxidants, i.e. polyphenolic compounds. The body also produces some antioxidants, known as endogenous antioxidants such as superoxide dismutase. Free radicals are produced by cells during food processing or due to the environmental factors. Factors that increase the production of free radicals in the body can be internal, such as inflammation, or external, such as pollution or UV exposure. If the body is unable to process and remove free radicals efficiently, oxidative stress can result. Oxidative stress has been related to heart disease, cancer, arthritis, stroke, respiratory disease, Parkinson's disease, and other inflammatory or ischemic conditions.

Antioxidant properties of compounds in complex samples are determined by different methods and most of these are based on spectrophotometric methods such as capture of free radicals DPPH, galvinoxyl or ABTS. Another method also used for estimating the antioxidant properties is the electrochemical methods based on carbonaceous based sensors. The advantages and the shortcomings of the methods together with the correlations existent between the results obtained by different methods will be analyzed.

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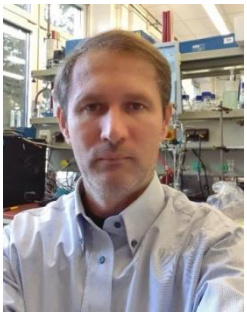

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Research interests
Development of novel sensors and biosensors, characterization of sensors and biosensors, electrochemistry, electronic sensory systems: e-tongue, e-nose, e-eye; chemometry, food chemistry, food analysis, synthesis and characterization of organic compounds, UV-VIS, FTIR, HPLC, TLC, GC-MS, deposition of sensitive materials onto substrates using different methods: Langmuir-Blodgett, Layer-by-Layer, electrodeposition, high vacuum sublimation, spin-coating.

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C26 VALORIZATION OF FOOD PROCESSING BY-PRODUCTS

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The food-processing industry produces a very high amounts of wastes or by-products that may represents a valuable and sustainable source of bioactive compounds. Wine industry is one of the sectors where secondary products are generated, with a potential negative impact on environment and human health. For this reason, international guidelines promote a circular approach for the management of winemaking wastes. Despite winemaking by-products are generally used to produce distillates, fertilizers and livestock feed, an alternative approach could be the formulation of healthy products, due to their content in polyphenols. The aim of the study was the application of *in vitro* methods for a preliminary evaluation of the phenolic pattern and the associated biological properties of wine making by-products from different red grape varieties. The methods included: 1) Folin-Cocalteau's assay for the assessment of total polyphenol content; 2) the vanillin assay for the quantification of total procyanidin content; 3) the pH differential method for the determination of total anthocyanin content; 4) DPPH assay for the measurement of total antioxidant activity; 4) dipeptidyl peptidase (DPPIV) inhibition assay to evaluate possible effects on glucose homeostasis. The results showed that winemaking by-products had potential positive effects on oxidative stress and promising effects on DPPIV.

Keywords: winemaking residues, circular economy, polyphenols, biological properties

Chiara DI LORENZO

Chiara Di Lorenzo is Associate Professor in Food Chemistry and Toxicology at the University of Milan. The main area of research includes quality control of plant food supplements and characterization of botanical ingredients.
The main analytical techniques used are chromatography (HPLC, TLC, HPTLC, GC); electrophoresis applied to food analysis and dietetic products; immunoenzymatic techniques (immunoblotting and ELISA) for the detection of food allergens in complex food matrices.

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C27 VITAMIN D IN THE CONTEXT OF COVID-19 ON PEDIATRIC PATIENTS

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Background: Vitamin D is a steroid hormone with an important role in calcium metabolism and bone homeostasis. The role of vitamin D as a hormone has been confirmed in various metabolic, enzymatic, physiological and pathophysiological processes related to many organs and systems in the human body. This immunomodulatory hormone has anti-inflammatory and antimicrobial effect. During viral infection, the antiviral effects of vitamin D has the ability to convert the inactive form of vitamin D into the active form by the alveolar epithelial cells. The antiviral effects of vitamin D can prevent viral replication directly, especially against enveloped viruses, and the coronavirus is one such virus.
Methods: We performed a bibliometric review of retrospective and prospective studies, meta-analyses and systematic reviews, related to vitamin D status of children with SARS-CoV-2 Infection.
Results: Studies analysed the relationship between vitamin D levels and incidence, prevention, symptoms, laboratory markers, severity and outcomes of COVID-19 in children. Vitamin D deficiency affects the severity of pediatric COVID-19 infection. Patients with moderate or severe courses of COVID-19 had lower levels of vitamin D when compared with mild COVID-19. Vitamin D deficiency was associated with more respiratory failure and severe systemic inflammatory response. Vitamin D levels were positively correlated with levels of serum calcium, lymphocytes, and neutrophils but negatively correlated with CRP, fibrinogen, and d-dimer value. Vitamin D deficiency and insufficiency is associated with higher dry cough, fever, chest CT findings, respiratory rate, length of stay, more severe tachypnea and tachycardia. Evidence from a systematic review and meta-analysis on children and adults, indicate that in case of adults, Vitamin D supplementation decreased the incidence of viral respiratory tract infection recommending vitamin D supplementation for several weeks (for people at risk of COVID-19).
Conclusion: Low levels of vitamin D were associated with increases in markers of inflammation, suggesting an important role of vitamin D in COVID-19 infection in children and adolescents, possibly by regulating the systemic inflammatory response.

Keywords: vitamin D, COVID-19, children

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Research interests

Main research interests are on Medical Biochemistry, Clinical Laboratory and Biological Environments Analysis, Spectrophotometric Methods applied in different aspects of day-to-day life.

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Research interests

Her current research interests include Data Mining, Bioinformatics, Educational (HEI) Policy, Network analysis.

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C28 ANTICANCER MECHANISMS OF NATURAL COMPOUNDS

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Cancer is a worldwide important health issue. In 2020, GLOBOCAN estimated that approximately 20 millions of new cases of cancer are discovered yearly and 10 millions of deaths per year are due to cancer. Therefore, finding and using every opportunity in preventing and treating cancer is a must.

Nature has always been a source of compounds with beneficial effects on human health. Bioprospection can represent a winning approach in anticancer drug design.

Natural compounds (e.g. apigenin, boswellic acid, curcumin, epigallocatechin gallate, resveratrol) have proved their anticancer activities in many in vitro and animal studies. These phytochemicals usually have pleiotropic effects, targeting simutaneously multiple molecular pathways involved in carcinogenesis or in cancer progression. The main mechanisms involved include, but are not limited to: induction of cancer cell apoptosis, reduction of cancer cell viability or proliferation, reduction or inhibition of tumor growth, decrease of tumor invasiveness and inhibition of metastasis.

This presentation summarizes the anticancer mechanisms of some phytochemicals and highlights the importance of valorizing the nature resources for preserving health.

Keywords: phytocompounds, phytochemicals, cancer

Teodora-Cristiana GRĂDINARU

Teodora-Cristiana Grădinaru graduated the Faculty of Medicine, Carol Davila University of Medicine and Pharmacy, Bucharest as valedictorian in 2017.
To date, she is a PhD student and Assistant Professor at the same University.
She also is a Dermatology resident physician at Elias Emergency University Hospital, Bucharest, Romania.

Research interests
Her main scientific interests are involvement of natural taste compounds in inflammation and cancer.

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SELECTED PUBLICATIONS

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- Associate Professor at "Carol Davila" University of Medicine and Pharmacy Bucharest.
- Graduated as MD from "Carol Davila" University of Medicine and Pharmacy Bucharest in 1994.
- PhD since 2007
- Lecturer since 2011
- Junior physician in Internal medicine since 1999, senior physician in Internal medicine since 2004, junior physician in Nephrology since 2011, senior physician in Nephrology since 2016.
- Training in cardiac, general, and vascular ultrasound completed in 2016, 2017, and 2018, respectively.
- Member of International Society for Ethnopharmacology, Romanian Society of Internal Medicine, Romanian Society of Nephrology.

Research interests
Psychosomatics (I have created the concept of psychocausal medicine), phytotherapy, taste science, diabetes, nephrology, cardio-nephrology, cardio-neurology, nephro-neurology, cardio-nephro-neurology.

C29 L - CITRULLINE – NEW WONDER SUPPLEMENT FOR CARDIO-VASCULAR HEALTH?

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Cardiovascular disease is the leading cause of death world wide. In this context, measures such as healthy diet, exercise and diminishing stress are needed to prevent cardiovascular disease.

Citrulline is an organic compound that is both a non-proteinogenic amino acid and a non-essential one. While diet (for example, watermelon) can be a source of citrulline, the endogenous synthesis of citrulline in the small intestine is the main way the human body obtains it. While studies in the past have focused on the effects of citrulline on athletes with mixed results, presently more research is done on the effects of citrulline on other categories of the population. The benefits of short-term citrulline supplementation are found in conditions such as: cardiovascular diseases, small intestine syndrome, muscle wasting, obesity and diabetes.

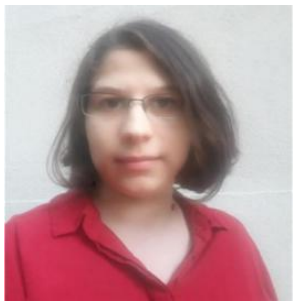
Concerning cardiovascular health specifically, citrulline acts mainly, through mediators such as arginine and nitric oxide in the following way: citrulline is transformed into arginine, then arginine is transformed into nitric oxide by the nitric oxide synthase. Nitric oxide is involved in endothelial function, helping with the relaxation of vascular smooth muscle and inducing vasodilation. Watermelon and citrulline supplementation have been shown to reduce blood pressure in studies on human subjects. Moreover, citrulline supplementation has been shown to improve resting aortic hemodynamics and arterial stiffness. Citrulline can help manage diabetes and obesity, two conditions with high cardiovascular risk, by lowering the glucose levels in the blood by stimulating insulin secretion and glucose uptake in the muscle and increasing lipolysis and β-oxidation in the adipose tissue.

Because the biological effects of citrulline supplementation are expressed, mainly, through arginine and nitric oxide, the long term use and/or high doses use of citrulline can have important side effects, although large population studies are needed to determine all the side effects and their severity. Moreover, an increase in nitric oxide levels due to citrulline supplementation may complicate and aggravate certain health conditions and interfere with certain medications' effectiveness.

In conclusion, regular intake of watermelon of citrulline supplements may prove to be a beneficial tool for the prevention and treatment of cardiovascular disease, although more research is needed to determine the effective dosage and the side effects.

Keywords: watermelon, nitric oxide, arginine, vasodilation

Elena VASILICĂ



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- Medical doctor in Laboratory Medicine

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Research interests

- Amino acid metabolism in chronic liver diseases.
- Amino acids as diagnostic biomarkers for liver disease.
- Amino acids as treatment for different diseases.
- Amino acids supplementation as prevention for disease.

SELECTED PUBLICATIONS

- **Elena Vasilica**, Laura Elena Gaman, Valeriu Atanasiu, Glutamine - Never Ending Resource In Liver Disease, New Trends On Sensing- Monitoring- Telediagnosis For Life Sciences, NT SMT-LS 2020, July 2020
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- **Elena Vasilica**, Laura Elena Gaman, Garlic - When Food Becomes Medicine, International Summer School Food Safety And Healthy Living - Fshl – 2022, September 2022, ISBN 978-606-19-1511-8

C30 KETOGENIC DIET AS A THERAPEUTIC TOOL

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The ketogenic diet is based on a particular selection of foods, in which the intake of carbohydrates is drastically reduced as an energy source in favor of proteins and fats. The ketogenic diet has received alternate support and criticism from the scientific world in relation to its use and the expected results.

When the intake of carbohydrates is reduced, the body mainly uses fats for energy purposes, hence the use of this diet in the treatment of overweight and obesity. In this dietary approach molecules called ketone bodies (ketogenic diet) are formed; these molecules can also be used by the brain which generally bases its energy metabolism on sugars.

The ketogenic diet has an important impact on the body and must be carried out under medical supervision because it is not without side effects.

The ketogenic diet is also used in the therapy of some pathologies, and in particular of epilepsy; interesting results have been obtained in the treatment of epileptic seizures in patients, especially children, who did not obtain satisfactory results with conventional drugs. In this lesson we will describe the main applications of the ketogenic diet, the current therapeutic approaches, and the possible side effects.

Keywords: ketone bodies, overweight, obesity, epilepsy

Patrizia RESTANI

Patrizia Restani is graduated in Pharmaceutical Chemistry and Technology and obtained a PhD in Toxicology at the Università degli Studi di Milano. Retired from 11.2022, she was a Full Professor in Food Chemistry, at the School of Pharmacy, Università degli Studi di Milano, where she was responsible for the teachings: 1) Food Chemistry; 2) Dietetic Products; 3) Analytical methods for detection of xenobiotics in foods. She is still an adjunct professor at the Università degli Studi di Milano for "Dietetic Products" teaching.

She was the Coordinator of the school in Scienze e Sicurezza Chimico-Tossicologica dell'Ambiente (Chemical Safety and Toxicological Environmental Sciences), Università degli Studi di Milano from 2011 to 2017 and from 2019 to 2022.

Patrizia Restani has been involved in numerous national and international research programs in Food Safety, Dietetic products, Risk and Benefit Assessment and has managed several scientific projects both as the project coordinator and as responsible of research units.

She coordinated the European Project PlantLIBRA (Plant Food Supplements: Level of Intake, Benefit and Risk Assessment) in the context of the 7th EU Framework Program, involving 25 partners distributed in 4 continents. She received the title of Honorary Professor at the Transylvanian University of Brasov (Romania).
Patrizia Restani is scientific secretary of the Commission IV "Safety and Health" at the OIV- International Organization of Vine and Wine- and is a member of the Italian Delegation (Ministry of Agriculture) at the same organization. She is a member of the technical committee for Nutrition and Animal health - Section for dietetics and nutrition of the Italian Ministry of Health.

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C31 NUTRITIONAL BENEFITS IN PATIENTS WITH CHRONIC CONDITIONS

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Nutrition plays an important role in the aetiology of chronic diseases but is also important in the long-term control of it. Nutritional advice is an important role of family physicians, having a privileged position to influence their patient. However, the dynamic of research in this field in terms of the benefits of certain nutrients or certain diets makes it more difficult and challenging.

We performed a review of literature with latest nutritional recommendations in terms of preventative and therapeutical benefits of nutrients and diets for chronic disease of various causes.

The role a general practitioner is examined and various instruments for diet counselling are presented.

Keywords: nutrients, diets, chronic diseases, primary care physicians, counselling

Andrea Elena NECULAU

In present, she is Associate Professor at the Department of Clinical, Fundamental and Prophylactic Sciences of Transylvania University, teaching Family Medicine, Primary Healthcare, Community Nursing, holding the position of Vice-dean of the Faculty of Medicine.
Her research interests are in Primary health care and Health Services development. She is also involved in quality improvement in primary care through participation as expert in several international projects during the past 20 years

The main outcome of her work are contributions to primary care prevention guidelines and supporting documents for health services development. Teaching undergraduate and postgraduate programs dedicated to family medicine is an important component of her carrier. Topics addressed are preventive care, chronic illnesses, immunizations, mother, and child health. She is a member of the National Society of Family Medicine, European Academy of Teachers in General practice, and family Medicine, of the European General Practice Research Network and of the Romanian Medical Balkan Union.

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Anca Maria LĂCĂTUȘ

Anca Maria Lăcătuș**,** is senior family physician and teaching assistant at Transilvania University of Brasov, Faculty of Medicine, Department of Fundamental and Prophylactic Sciences. She graduated as medical doctor at Iuliu Hatieganu University of Medicine and Pharmacy in Cluj-Napoca 2000. She is currently a PhD student at Transylvania University of Brasov. She has an interest in Primary health care and Health Systems development focusing on the organization of Out of Hours Services in primary care, social aspects in primary care services and interprofessional network collaboration. She has also a strong background in emergency medicine and pediatric care.

She is a member of the EUropean Research Network for Out-Of-Hours primary health care (EurOOHnet), a member of the European General Practice Research Network (EGPRN), board member of the Professional Association of Family Medicine of Brasov (member of the Romanian National Society of Family Medicine) and member of Brasov Family Violence Prevention Network.

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SELECTED PUBLICATIONS

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In the present is doctoral candidate at Transilvania University and teaching assistant at the Department of Clinical, Fundamental and Prophylactic Sciences. Primary healthcare and clinical pharmacology are something that interests her. Her doctoral work focuses on elderly polypharmacy, adherence, and medication beliefs. She covers primary care-related subjects as a teaching assistant, including end-of-life care, chronic illnesses preventative care, and general pharmacology.

C32 NUTRITION AND FOOD SAFETY DURING PREGNANCY

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Nutrition and food safety are critical considerations during pregnancy, as they play a significant role in maternal and fetal health. This presentation aims to provide a comprehensive understanding of the various aspects related to nutrition and food safety during pregnancy. Weight gain during pregnancy is influenced by complex biological processes and serves as a crucial parameter for evaluating energy requirements. The recommended weight gain distribution throughout pregnancy is presented, with emphasis on the importance of pre-conception weight in determining optimal weight gain.

Furthermore, the presentation discusses the dynamic energy requirements during pregnancy, highlighting the importance of meeting these needs through a balanced and healthy diet. Additionally, the presentation underscores the importance of food safety during pregnancy. It addresses potential foodborne illnesses and provides recommendations for avoiding high-risk foods, such as raw or undercooked meats, unpasteurized dairy products, and certain types of fish that may contain high levels of mercury.

Overall, this presentation aims to equip healthcare professionals with valuable knowledge and practical guidelines for ensuring proper nutrition and food safety during the transformative journey of pregnancy.

Keywords: maternal health, weight gain, fetal development, energy requirements

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Laura Gavrilas is a dedicated professional with expertise in the fields of nutrition, dietetics, and research. From February 2015 to 2019, she served as an Assistant Professor, and since 2019, she has been a University Lecturer at the Department of Bromatology, Hygiene, Nutrition, Faculty of Pharmacy at the University of Medicine and Pharmacy "Iuliu Hatieganu", Cluj-Napoca.

Laura Gavrilas has been actively involved in teaching various courses, including Healthy Human Nutrition, Community Nutrition, Nutrigenetics and Nutrigenomics. Additionally, Dr. Gavrilas has been working as a Clinical Nutritionist-Dietician since 2014, collaborating with medical centres to assess the nutritional status of both healthy individuals and those with metabolic pathologies.

Her work has been published in reputable scientific journals, such as Food & Function, Nutrients, Frontiers in Nutrition, International Journal of Molecular Sciences and others.

Research interests
Her research efforts have focused on topics related to nutrigenetics in colorectal cancer and gut microbiota modulation in psoriasis as well as the influence of bioactive dietary components in prevention and treatment.

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C33 DO MICROPLASTICS IN VINEYARD SOIL AFFECT THE BIOAVAILABILITY OF VINE NUTRITION?

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Microplastics can alter bio-physico-chemical processes in the soil, but whether these changes have further effects on soil fertility, and if so, whether these effects vary depending on the type of vineyard soil and the type of plastic used in the vineyard? Our study assessed the effects of microplastic particles from polypropylene (PP) and polyvinyl chloride (PVC) on the availability of macro- and micronutrients in two vineyard soils contrasting in pH and mineralogy. The results show that micro-PVC particles have a stronger influence on the availability of macronutrients in the soil. The most affected macronutrient was nitrate, as the availability of this element decreased by more than 90% with the presence of micro-PVC particles in the soil. Further biological analyses reflected that micro-PVC particles significantly increased also the soil respiration and enzymatic activity. The abundance of Firmicutes and Crenarchaeota bacterial phylum, both take a role in N-cycle, changed significantly. Although research on the effects of microplastics on nutrient cycling in soils is still in its infancy, microplastics directly affect some soil properties that may also have indirect effects on soil nutrient cycling, e.g. cycling of C, P and according to our results especially to N-cycling.

Keywords: micronutrients; macronutrients; activity of soil microorganisms; structure of soil microbiom

Erika JEZ

Erika Jez finished her PhD in 2019 in Biotechnical Sciences in department for Agronomy at University of Ljubljana. Already during the PhD study, she was habilitated as an assistant for Soil Chemistry and Biology at Biotechnical Faculty.
Since 2019 she become a member of Wine Research Centre team at University of Nova Gorica. Her main topic of interest are Soil Chemistry and Biology, Agronomy and Environment (with focus on clime change), Environmental Monitoring (active in microplastic monitoring) and Environmental Management.

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C34 YEAST-PRODUCED VOLATILES CAN ACT AS ANTIFUNGAL BIOAGENTS AGAINST PHYTOPATHOGEN BOTRYTIS CINEREA

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Botrytis cinerea Pers., the causal agent of grey mould disease, is responsible for substantial economic losses, as it causes reduction of grape and wine quality and quantity. Exploitation of antagonistic yeasts is a promising strategy for controlling grey mould incidence and limiting the usage of synthetic fungicides. In our previous work, 119 different indigenous yeasts were screened for putative multidimensional modes of action against filamentous fungus *B. cinerea*. The most promissing biocontrol yeast was *Pichia guilliermondii* ZIM624, which exhibited several anatagonistic traits (production of cell wall degrading enzymes, chitinase and *β*-1,3-glucanase; demonstration of *in vitro* inhibitory effect on *B. cinerea* mycelia radial growth; production of antifungal volatiles, assimilation of a broad diversity of carbon sources, contributing to its competitivnes in inhabiting grapes in nature).

Accordingly, our researsch is focused on the study the antifungal mechanisms by assessing the volatiles produced by *P. guilliermondii* ZIM624. Namely, a study was conducted to identify volatile organic compounds (higher alcohols, volatile phenols, esters and terpenes) produced by antagonistic *Pichia guilliermondii* strain ZIM624 and to determine the efficacy of the chosen volatiles of *P. guilliermondii* in suppression of *B. cinerea* growth and control of *Botrytis* fruit rot of grape berries. Comprehensive assessment of produced volatiles in the process of wine production was achieved by HS-SPME-GC-MS analysis, whereas among identified volatiles, 13 yeast-produced volatiles were selected and their antifungal activity was tested against *B. cinerea* in the fumigation bioassay. In general, terpenes were the most effective against *B. cinerea* mycelium growth. From the goup of volitile phenol 4-vinyl phenol and from the group of esters isoamyl acetate also effectively inhibited mycelial growth of *B. cinerea*. Additionaly, exposure of *B. cinerea*-infected grape berries to the volatiles from *P. guilliermondii* cultures also lowered the number of infected grape berries, when applied to *in vivo* assay.

Thus, novel research results strongly suggest that yeast produced volatiles such as terpenes, volatile phenols and esters could be used as biofumigants.

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Research interests

- Analysis of biological and food samples and analysis of secondary metabolites in plant extracts
- Plant polyphenols analysis using chromatographic tehniques coupled with UV-Vis and MS detectors
- Must, wine and cider analysis and quality control
- Assessment of chemical compounds responsible for wine and cider aromatic profile
- Assessment of chemical compounds which are produced by yeasts during fermentation and acting like bioagents against bacteria

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C35 LATERAL FLOW ASSAY AND FOOD SAFETY

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Owing to day-to-day growing of worldwide population, the providing required food productions and increase of diversity have become an important duty and concern of governments. Also, due to direct relation between quality of products and health level of communities, and besides effect of this relation on the reducing of the treatment costs which imposed on the governments, evaluation and control of food safety have been of importance. So quality control of products has possessed an indispensable role.

Several methods such as enzyme-linked immunoassay (ELISA), polymerase chain reaction (PCR), liquid chromatography have been widely used for detection of foodborne contaminations. These methods suffer from shortcomings such as expensive reagents usage, experts requirements, and hard maintenance situation.

Recently biosensors have gained considerable attention for development of point-of-care (POC) devices with advantages of simple to use, inexpensiveness, and person-centered. Among various POC methods, lateral flow assay (LFA) have been facing more public favor due to potential features such as portability, home usability, visible signal, reliability, low cost, fast detection, and easy integration with all transduction methods. In this presentation, I introduce LFA method and describe its application for detection of contamination in foodborne in term of targets, nanoparticles, labels, bioreceptors, and transduction methods.

Keywords: point of care; quality control; biosensors; food products

Arash MOHAMMADINEJAD

Arash Mohammadinejad received a PhD degree in analytical chemistry from Payame Noor University of Khorasane Razavi, Mashhad Branch, Iran in 2019. He had been a postdoctoral researcher in Department of Medical Biotechnology and Nanotechnology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, from 2019 to 2022.

Also, he achieved rank of top researcher of Payame Noor University of Khorasane Razavi campus in 2022. He has been continuing his researches as a postdoc researcher at Transilvania University under supervision of Prof. Mihaela Badea.

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Research interets

His main research interests include biosensors, electrochemical and optical sensors, aptasensors, luminescence sensors based on catalytic effect of nanoparticles, lateral flow assays and targeted delivery systems.

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C36 APTAMER - BASED DETECTION OF LYSOZYME

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Lysozyme is a 14 kDa enzyme found in plants, bacteria, animals and in the human body. The accurate detection of low levels of lysozyme is very important for e.g., the monitoring of residual levels of egg white lysozyme in foods linked to allergy risks, the detection in biological fluids as indicator of various medical conditions and the study of amyloid familial amyloidosis.

Aptasensors, i.e., devices made by combining a specific aptamer for the target analyte with a physical transducer are promising analytical solutions for the cost-effective and accurate detection of lysozyme. After shortly reviewing the main methods for developing aptasensors for lysozyme, several examples of optical and electrochemical biosensors developed in our laboratory are discussed in detail. Applications for lysozyme's detection in wine and for the study of amyloid aggregation are presented.

The main challenges to the development of aptasensors for lysozyme are discussed. Based on the examples presented, the key point for a new aptasensor developer is that the detection method and aptasensor design should be chosen by having in mind the final application as they are directly influenced by the specific analytical requirements. Moreover, aptasensors for other proteins can be developed in a similar way.

Keywords: electrochemical biosensor, optical biosensor, wine, protein aggregation

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Alina VASILESCU

Alina Vasilescu is Principal Researcher Grade I at the International Centre of Biodynamics, a research institute in Bucharest, Romania devoted to the study of biosensors and biodynamic systems. Her background is in Analytical Chemistry and she obtained her PhD from both the Faculty of Chemistry, University of Bucharest, Romania, and University of Perpignan, France in 2001. Her research interests are cantered on the development and validation of biosensors for practical applications and she has coordinated several international and national projects related to biosensors.

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C37 INVESTIGATING THE POTENTIAL USE OF PROPOLIS IN VETERINARY MEDICINE

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Propolis, a therapeutic substance derived from bees, is gaining recognition for its potential applications in veterinary medicine. With a historical foundation in traditional Eastern medicine, propolis possesses a diverse range of beneficial properties, including antimicrobial, anti-inflammatory, immunomodulatory, antioxidant, and wound-healing effects. These attributes make propolis a valuable resource for preventing and managing various veterinary conditions. Scientific research has demonstrated the efficacy of propolis in treating a wide array of veterinary issues. For example, studies have shown its effectiveness in managing dermatological conditions like dermatitis and promoting wound healing in companion animals. Propolis's antimicrobial properties have proven valuable in the treatment of infectious diseases, such as respiratory and gastrointestinal infections in livestock and poultry. Additionally, propolis exhibits promise in addressing oral health problems like periodontal disease in dogs and cats due to its antimicrobial and anti-inflammatory actions. Despite its potential benefits, the integration of propolis into mainstream veterinary medicine has been limited. However, the growing recognition of complementary and alternative therapies, coupled with endorsements from reputable organizations like the World Health Organization, underscores the need to establish a legal framework for propolis application in veterinary medicine. To fully harness the potential of propolis, it is essential to grant veterinarians equal responsibilities as doctors and dentists, enabling them to incorporate propolis into their treatment protocols. Specialized training programs should be developed to educate veterinary professionals on the appropriate utilization and dosage of propolis for various conditions. Additionally, allocating financial support for scientific research on propolis in veterinary medicine would provide valuable insights into its mechanisms of action and expand the evidence base. Public institutions can play a pivotal role in promoting the use of propolis in veterinary practice. By conducting and supporting comprehensive studies on its applications, disseminating knowledge through training programs, and offering financial incentives for research endeavours, the integration of propolis can be facilitated within veterinary medicine.

In conclusion, propolis holds significant potential as a therapeutic resource in veterinary medicine. Establishing a legal framework, investing in research and training, and promoting its utilization would allow the veterinary community to utilize the benefits of propolis, leading to enhanced animal health outcomes. Embracing propolis as an evidence-based complementary therapy has the potential to improve treatment options, promote holistic approaches, and ultimately benefit the well-being of both animals and humans.

Keywords: propolis, veterinary medicine, preventive healthcare, holistic approaches

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- Faculty of Biotechnical Sciences,
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- 2019 - to present Head of Master Studies
- 2020 - to present Associate Professor
- 2015 - 2020 Assistant Professor
- 2007 - 2015 Teaching Assistant

Education

- 2012 – 2015 Ph.D. in Biotechnical Sciences, Genetic and Selection of Domestic Animals *subspecialty* in Breeding Farm Animals, Biology and Bioengineering of the Reproduction, Trakia University, Faculty of Agriculture, Stara Zagora, Bulgaria
- 2007-2011 M. Sc in Biotechnical Sciences, University "St. Kliment Ohridski" – Bitola, Republic of Macedonia, Faculty of Biotechnical Sciences
- 2002 – 2007 Bachelor in Processing of Animal Products, University "St. Kliment Ohridski" – Bitola, Republic of Macedonia, Faculty of Biotechnical sciences
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C38 RESILIENCE AND BURNOUT. A SYSTEMIC APPROACH SINCE THE ACADEMIC TRAINING PERIOD

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Background: Burnout syndrome can occur even during the training period, regardless of the chosen profession, which is why the resilience exercise must start at school
Educational reforms are a source of stress and exhaustion that cannot be neglected.
Purpose: The systematization of information regarding the main methods of preventing and overcoming the level of stress, and identifying the own resources necessary to resist stress favors the development of prevention programs that support students regardless of the study program followed.
Method: The main databases (Google Scholar, PubMed, Scopus) on burnout and resilience were analyzed, with information from the last 10 years.
Results and discussion: Resilience, considered as the ability to adapt positively to the main sources of stress, is essential for the holistic approach to the academic training process, ensuring adequate support both at the individual and at the organizational level
Conclusion: The problem of burnout has become more and more obvious with the pandemic, which has also changed the way in which the training and evaluation of students is carried out, and the development of resilience solutions is becoming a necessity.

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Research interests
Ms. Liliana Rogozea, professor, MD, PhD, Vice- rector with public relations. Her teaching and research fields are: counseling in ethics, health promotion, and humanbeha vior.
She has expertise in curriculum development, design of research methods in international project activities (e.g. Tempus S-JEP –12156 –97, Leonardo da Vinci RO/2006/97125/EX), and member of MATRA Project „Reinforcement of the Integrated System of Extramural

Mental Health Care Services in Three Counties in Romania" coordinator de: HealthNet-TPO M, September 2006, and in coordination with international co- operations, in conferences organizing. Other international projectcoo rdinate by prof Rogozea are: "RING – TransferRING Supports for Caregivers" (LLPLDV-TOI-09-IT-0446), Health Rehabilitation through Physical Exercise (HARPE, Project no. 503202-LLP-1- 2009-1-UK-ERASMUS-ECDSP), Healthy Europe through learning practice (HELP, LEONARDO DA VINCI 2011-1-GB2-LEO05-05499), "Pervasive development disorders (Autism, Asperger Syndrome, ADHD)" (P_ASA LLPLdV/VETPRO/2011/RO/309), Moldova Higher Education Leadership and Management /MHELM 609656-EPP-1-2019-1-MD-EPPKA2-CBHE-SP.
Also she is member of management team of "Equal opportunities for health: action for development" (CUAMM, OCI-NSA ED/2011/239-187). She has several publications abroad as well.102 paper index in Web of Science (original article, review, editorial material,meeting abstract and proceeding)
She is editor or co-editor of 4 journals and reviewer for few national and international medical journals.

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- Popescu, I. G., Sechel, G., Leaşu, F. G., Ţânţu, M. M., Cotoi, B. V., & **Rogozea, L**. M. (2018). Correlations on the protection of personal data and intellectual property rights in medical research, Rom J Morphol Embryol, 59(3), 1001-1005
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- Mosoiu D, **Rogozea L**, Landon A, Bisoc A, Tint D. Palliative care in heart failure: A public health emergency. American Journal of Therapeutics. 2020 Mar 1;27(2):e204-23.
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- Grigorescu S, Cazan AM, **Rogozea L**, Grigorescu DO. (2022) Predictive Factors of the Burnout Syndrome Occurrence in the Healthcare Workers During the COVID-19 Pandemic. Front Med (Lausanne). Jun 9;9:842457. doi: 10.3389/fmed.2022.842457. PMID: 35755041; PMCID: PMC9218740.

Daniela POPA

Daniela Popa is Associate Professor at Transilvania University of Brasov, Romania, Director of Teacher Training Department.
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SELECTED PUBLICATIONS

- **Popa, D**.. "The relationship between self-regulation, motivation and performance at secondary school students." Procedia-Social and Behavioral Sciences 191 (2015): 2549-2553.
- **Popa, D**., et al. "Using mixed methods to understand teaching and learning in COVID 19 times." Sustainability 12.20 (2020): 8726.
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- Landøy, A., **Popa D.,** and Repanovici A. Collaboration in designing a pedagogical approach in information literacy. Springer Nature, 2020.