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7th Edition of Euro-Global Conference on

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08-10
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BOOK OF ABSTRACTS

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7th Edition of Euro-Global Conference on

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BOOK OF

ABSTRACTS

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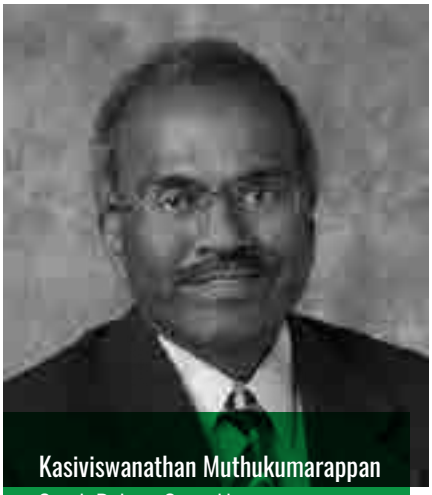
Giovanni De Francesco
University of Perugia, Italy

Iuliana Vintila
University Dunarea de Jos Galati, Romania

Jashbhai B Prajapati
Chairman, IDA (WZ), India



Kasiviswanathan Muthukumarappan
South Dakota State University, United States

Lars Thore Fadnes
University of Bergen, Norway

Maria Jesus Villasenor Llerena
University of Castilla-La Mancha, Spain

Myoungsook Lee
Sungshin Women's University, South Korea

Ombretta Marconi
University of Perugia, Italy

Keynote Speakers

Raffaella Conversano
University of Bari, Italy

Rita Singh Raghuvanshi
Govind Ballabh Pant University of Agriculture andTechnology, India

Said Bouhallab
INRAE, France

Viktor Fedorovich Stukach
Omsk State Agrarian University, Russia

Thank You All...

Welcome Message

Dear Conference Attendees,

It gives me great pleasure to welcome each one of you here today at FAT 2025. Our gathering promises to be a beacon of knowledge and collaboration in the ever-evolving landscape of food science.

Among the mouth-watering debates and exciting new findings, I am elated to deliver my keynote speech on the "Predicting Salmonella inactivation in water from bubble sparkling cold plasma treatment". Let's use science to our advantage and make sure every meal is safe and tasty.

Join me in taking advantage of this chance to have significant discussions, exchange ideas, and build relationships that will advance our industry. Every one of you, I implore you to take part and provide your distinct viewpoints to deepen our shared understanding.

I appreciate you taking part and look forward to the fascinating discussions that are ahead.

Dr. Kasiviswanathan Muthukumarappan

South Dakota State University, United States

Welcome Message

Dear Conference participants,

It is an honor for me to write some welcome notes. It also gives me great pleasure to welcome you to FAT 2025, which will undoubtedly be a venue for fruitful exchanges in all areas of the vast food science landscape. With its numerous multidisciplinary sessions based on diverse yet complementary presentations, this conference constitutes the ideal place to discover the challenges and scientific progress made in the different fields of food science and technology aiming to meet the colossal environmental, nutritional and socio-economic challenges that lie ahead. While thanking you for your interesting and varied contributions, I wish you an excellent stay in the welcoming city of Valencia, leaving with many new ideas and fruitful scientific collaborations.

Dr. Saïd Bouhallab

INRAE, France

Welcome Message

Dear Colleagues, friends and attendees,

It is a huge pleasure for the Scientific and Organising Committees of 7th Edition in Euro-Global Conference on Food Science and Technology (FAT-2025) to welcome you all in the exciting city of Valencia from September 8th to 10th. We are honoured to have the opportunity to bring together internationally renowned scientists, young researchers, industry representatives, entrepreneurs, chemists, biotechnologists, pharmacists and many other professionals working in the impressive world of food science and technologies. This three-day hybrid event will include oral and poster presentations, as well as debates and information exchanges on challenging topics such as Food Nanotechnology, Nutritional Science and Public Health, Food Processing and Engineering and Food Toxicology among other emerging technological and scientific areas, with the aim of achieving competitive and innovative solutions. Our main interest is to develop a scientific event combining the experiences of experts from the university, industry, and entrepreneurship sectors, with the aim of stimulating debate, fostering collaboration, and expanding our knowledge in cooperative groups with a wide range of perspectives. This will drive innovation in all fields related to Food Science and Technology. We wish you a successful congress!!!.

Prof. Dr. Mª Jesús Villaseñor Llerena

University Of Castilla-La Mancha, Spain

Welcome Message

Dear Conference Participants,

It is a great honor and pleasure to welcome you with some welcome remarks for the 7th edition of the Euro-Global Conference on Food Science and Technology (FAT-2025) that will be held from 08 to 10 September 2024 in Valencia, Spain. The watchword of this edition is “Explore” the new frontiers in the field of science and technology applied to food; a huge invitation to go “beyond”, to focus on man in a new vision of his essence, of the satisfaction of his primary needs in a modern vision and of his being a citizen of the world.

If progress in productivity and technology has significantly improved the use of natural resources and food security, the path towards the protection of its "nutrition" as such is still long, having to deal, ever more rapidly, with threats due to climate change, the escalation of natural disasters that in fact continuously modify the territories, the proliferation of parasites considering the other side of food that, now become too refined by cultivation methods and commercial choices for its production, orient the vision of man no longer as a being but as a stomach to be filled.

This opens up new opportunities, including technological ones, to adapt and re-adapt, for example, the instruments at the service of food and its consumption by those who, due to compromised clinical conditions, need alternative instruments; to obtain greater productivity and to introduce intelligent and differentiated methods to adapt, in the most functional way possible, food and its primary intentional concept of "nutrition", understood as nourishment and not only of the body but also of the spirit, to man.

It is not about "adding a seat at the table" but about directing the gaze towards a physiological transformation that is also a real change in attitudes through the construction of paths aimed at promoting the food process, as the most suitable place for growth for all the actors involved in building a culture of inclusion, in which every diversity is recognized as a fundamental resource for enriching the global community.

This conference calls for a common commitment to break down barriers, eliminate prejudices and design paths that enhance the potential of each individual with passion, competence and, above all, a deep trust in human capabilities.

Thank you to all of you and the contributions that each of you will bring to this conference because only together can we transform this vision into reality.

Prof. Dr. Raffaella Conversano

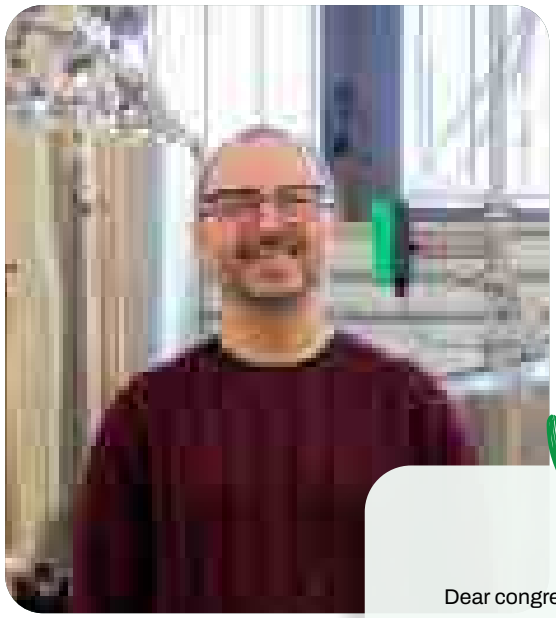
Fasano, Italy

Welcome Message

Dear congress visitors, it is an honor and pleasure to write a few welcome notes. The United Nations estimates that, due to the growing global population (projected to reach 10 billion by 2050), global food production will need to double. The pressure on the environment from human activities—linked to population growth, economic development, production methods, and consumption patterns—is steadily increasing worldwide. This has significant impacts on terrestrial and marine ecosystems, as well as on natural resources such as soil, water, air, and biodiversity. In this context, the impact of agricultural and food production activities is particularly significant, as they account for up to 30% of global greenhouse gas emissions and up to 70% of freshwater use. These sectors directly affect the increasingly urgent issue of climate change and its effects on natural systems and societies in rural, coastal, and urban areas across countries. The situation clearly calls for a transition to more sustainable food systems. The agri-food by-product upcycling represents one of the strategy toward "sustainable models of production and consumption."

Prof. Ombretta Marconi

University of Perugia, Italy



Welcome Message

Dear congress visitors,

I am thrilled to have you join us for this exciting event. This conference brings together several scientists to explore the latest advancements and trends in Beverage industry. Our goal is to foster meaningful discussions, inspire new ideas, and create lasting connections. Throughout the conference, you will have the opportunity to engage with thought-provoking speakers, participate in interactive sessions, and network with peers who share your passion for Beverage industry. We encourage you to take full advantage of the diverse range of activities and resources available.

Thank you for being a part of this vibrant community. Enjoy the conference!

Giovanni De Francesco

University of Perugia, Italy

Welcome Message

Dear Nutrition 2025,

Thank you for the honour of Nutrition 2025 presenting a keynote presentation to the conference participants. Healthy eating is linked with a range of favourable health outcomes. We have previously published the Food4HealthyLife model that estimated the impact of dietary changes on life expectancy but has not yet modelled disease-specific morbidities. I will now present our findings from several high-impact publications summarizing background evidence for associations between food choices, morbidity and mortality using systematic umbrella review framework. Such knowledge will also be essential for updating of dietary guidelines and for providing up-to-date guidance. I look forward to the conference!

Prof. Lars Fadnes

University of Bergen, Norway

Welcome Message

Dear Conference Attendees,

It is my honor and great pleasure to address you a welcome message for the session entitled “Nutrition 2025”. The public nutrition is the most important public health issues at the global level. The catering products are preferred by the young population in comparing with the traditional food meal. In this regards, the nutrition and health claims harmonization need to be considered as a crucial aim by the global scientific word and by the policy makers. I invite you to join us in our international conference to take advantages from this great scientific opportunity of exchanging knowledge and share your significant scientific insights toward the Nutrition participants including young and senior researchers, scientists, clinicians and academicians.

A/Prof. Dr. Vintila Iuliana

University “Dunarea de Jos” Galati/Global Harmonization Initiative Nutrition WG Chair, Romania/ Austria

Welcome Message

Dear Delegates,

Join me for the 8th International Nutrition Research Conference (Nutrition 2025) as we explore the future of nutrition for better health outcomes. Proper nutrition, derived from wholesome food, forms the foundation of life. The United Nations' Sustainable Development Goals (UN-SDGs) emphasize the importance of affordable, sustainable, and healthy diets.

Nutrients can only fulfil their functional roles when delivered through appropriate food matrices. Dairy products, with their unique structural composition, enhance the bioavailability and assimilation of nutrients, making them an ideal dietary source. At Nutrition 2025, we will delve into such critical discussions and many other essential topics related to food, nutrition, health, and sustainability.

Come and be part of this enriching scientific gathering!

Prof. (Dr.) J. B. Prajapati

Chairman, Indian Dairy Association (West Zone),
Mumbai, India

Welcome Message

Dear guests of the Congress!

It is a great honor for me to address you with greetings. Your innovative research aims to ensure food security for the world's inhabitants. Today, in the context of socio-political turbulence of society, food products are becoming more and more relevant. Among the important tasks today, I see food assistance to socially vulnerable categories of the population.

Providing the population with environmentally friendly and healthy nutrition on a global scale is taking place in the context of the growing process of soil degradation. Today, it is necessary to stop and reverse the processes of soil degradation as one of the environmental crises.

The problem of coordinating food aid on a regional and metropolitan scale through the formation of an integrated infrastructure in the form of public-private entities, production and logistics centers needs to be studied in the context of national traditions.

A specialized production and logistics center will eliminate inefficient intermediaries, ensure quality control at all stages of food preparation and distribution, reduce storage costs and increase the share of agricultural producers in the final price for the consumer in the food chain. The conditions that together provide economic and social effects from reducing the loss of raw materials, both on a regional scale and in the conditions of market interaction within the framework of public-private partnership, are considered.

I hope that the research will contribute to solving the problems of food production, processing and distribution in your countries

Prof. Victor Stukach

Agrarian University, Omsk, Russia

Welcome Message

It is an honour to welcome you to this distinguished conference, which celebrates the remarkable field of Food Nutrition and Health—a discipline that is foundational to human well-being and societal progress. The field of Food Nutrition and Health has been at the forefront of addressing some of the most pressing global challenges. From combating malnutrition and food insecurity to curbing the rise of lifestyle-related diseases, it has provided transformative solutions that directly impact lives. In an era marked by the dual burden of undernutrition and overnutrition, this field has emerged as a powerful force in bridging gaps, not only in health disparities but also in economic and social inequalities. It has played a crucial role in promoting public health policies, designing innovative interventions, and embracing both traditional wisdom and modern technologies to create holistic solutions. Its integration with sustainability initiatives has further paved the way for more equitable and resilient food systems, ensuring that nutrition is a central pillar of global development goals. As researchers, practitioners, and policymakers, our collective efforts in this field are shaping a future where health and nutrition are accessible to all, transcending geographic, economic, and cultural barriers. Together, we have the potential to drive meaningful change, improving the quality of life for present and future generations while safeguarding the planet's resources.

Dr. Rita Singh Raghuvanshi

Emeritus Scientist, ICAR, India

ABOUT
MAGNUS GROUP

Magnus Group, a distinguished scientific event organizer, has been at the forefront of fostering knowledge exchange and collaboration since its inception in 2015. With a steadfast commitment to the ethos of Share, receive, grow, Magnus Group has successfully organized over 200 conferences spanning diverse fields, including Healthcare, Medical, Pharmaceutics, Chemistry, Nursing, Agriculture, and Plant Sciences.

The core philosophy of Magnus Group revolves around creating dynamic platforms that facilitate the exchange of cutting-edge research, insights, and innovations within the global scientific community. By bringing together experts, scholars, and professionals from various disciplines, Magnus Group cultivates an environment conducive to intellectual discourse, networking, and interdisciplinary collaboration.

Magnus Group's unwavering dedication to organizing impactful scientific events has positioned it as a key player in the global scientific community. By adhering to the motto of Share, receive, grow, Magnus Group continues to contribute significantly to the advancement of knowledge and the development of innovative solutions in various scientific domains.

ABOUT

CPD Accreditation

Continuing Professional Development (CPD) credits are valuable for FAT & Nutrition 2025 attendees as they provide recognition and validation of their ongoing learning and professional development. The number of CPD credits that can be earned is typically based on the number of sessions attended. You have an opportunity to avail 1 CPD credit for each hour of Attendance. Some benefits of CPD credits include:

Career advancement: CPD credits demonstrate a commitment to ongoing learning and professional development, which can enhance one's reputation and increase chances of career advancement.

Maintenance of professional credentials: Many professions require a minimum number of CPD credits to maintain their certification or license.

Increased knowledge: Attending FAT & Nutrition 2025 and earning CPD credits can help attendees stay current with the latest developments and advancements in their field.

Networking opportunities: FAT & Nutrition Conference provide opportunities for attendees to network with peers and experts, expanding their professional network and building relationships with potential collaborators.

Note: Each conference attendee will receive 27 CPD credits.

Our Exhibitor

Merck KGaA Darmstadt, Germany is a leading company in offering top-quality products for analytical lab work in the F&B and new food markets, committed to uniquely support your work. With proven regulatory expertise and a dedicated portfolio of the most trusted tools and services covering R&D, manufacturing and QC:

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KEYNOTE PRESENTATIONS

Giovanni De Francesco[1,2]*, Elio Moretti[1], Ombretta Marconi[1,2]

[1]Department of Agricultural, Food and Environmental Sciences, University of Perugia, Perugia, Umbria, Italy

[2]Italian Brewing Research Centre, University of Perugia, Perugia, Umbria, Italy

Effect of yeast strain and pasteurization on low-alcohol beer quality properties

The global No-Low Alcoholic (NoLo) beer market was valued at over $22 billion in 2022 and is expected to grow at a Compound Annual Growth Rate (CAGR) of 5.5% from 2023 to 2032. This growth is driven by increasing consumer preference for healthier alternatives to alcoholic beverages. Younger generations, particularly Millennials and Gen Z, are driving the growth of the non-alcoholic beer market. Millennials may view NoLo beer as a functional product, trusting it without emotional attachment. Producing a better product could lead to increased consumption.

Non-alcoholic beers produced with reduced fermentations often have a recognizable off-flavour, often described as an undesirable taste reminiscent of unfermented wort. Beers produced by vacuum distillation, on the other hand, are characterized by a flat volatile profile and require flavouring to improve. The objective of this work was to evaluate the effect of yeast strain and pasteurization on the composition and sensorial properties of a Low-Alcohol Beer (LAB). The beers were produced with two maltose-negative Saccharomyces cerevisiae yeasts (SafBrew™ LA-01 by Fermentis-Lesaffre and LONA® LalBrew by Lallemand) capable of performing limited fermentation on the wort. The most important quality parameters of

Biography

PhD Giovanni De Francesco is a fixed-term researcher (RTD-B) specializing in brewing and malting science. He serves as a lecturer in Food Science at the University of Perugia and has dedicated the past decade to scientific research, boasting over 30 publications in both national and international journals. According to Scopus, his work has garnered 662 citations across 30 papers, with an H-index of 16. He is the Formation Area Manager and Panel Leader at Italian Brewing Research Centre, a renowned University research Centre on beer and malt production. He has been a judge in national and international beer tasting competitions for the past 10 years and has been imparting his expertise in professional and University courses on beer and malt production.

beers have been characterized in accordance with EBC methods. Additionally, the influence on the sensory characteristics of the beers after the addition of hop extracts and pasteurization was evaluated.

Both tested yeasts exhibited similar behaviour in fermentation rate and final alcohol content, which was 0.5% v/v. The pH and bitterness were also similar among the samples. The pasteurization did not influence the foam head of beers. Pasteurization influenced the sensory profile of the beers under study. The panellists detected a decrease in the intensity of hop note. However, hopping with innovative CO_2 hop extracts allowed for a significant improvement in the sensory profile of the low-alcohol beers. Interestingly, the beers exhibited high drinkability and good body, a positive aspect that contrasts with one of the most significant issues of NoLo beers, namely the watery character. This project highlighted a new interesting opportunity for brewing companies to expand their product portfolio thanks to the recent development of active dry yeasts specific to produce non-alcoholic beers. The results show that the beer benefited from the addition of hop extracts, which improved its sensory profile. The results of the study demonstrate the absolute utility of pasteurization, which, despite a slight influence on the beer's aroma and taste, provides numerous advantages to the producer, such as microbiological safety, stability of the NoLo beers, and the possibility of selling the product in large-scale retail. Pasteurization remains an essential operation in the production of NoLo beers.

This study was supported under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, Call for tender No. 1409 published on 14.9.2022 by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU – CUP J53D23018340001 and by the Italian Ministry of Ministry of University and Research (MUR).

Vintila Iuliana

Department of Food Science, Food Engineering, Biotechnology and Aquaculture, University “Dunarea de Jos” Galati, Romania

The harmonization of health & nutrition claims in the global catering industry

The global catering industry increase in economic importance and young population preferences because its convenience, fashionable and accessible way of mass-feeding with standardized foods &beverages at average prices. The nutrition aspects involved by the complex structure of the catering products due to specific nutrition labelling issues, different from the regulations dedicated to the classical food products. The science-based databases with nutrition composition of the raw food products and convenience foods used in the catering technology need to be created, as an easy-to-use application to calculate the mandatory nutrition information included in the FOP labelling. Regarding the nutrition claims, the warning labelling need to replace the preventive labelling concerning the presence of ingredients with potential risk of food intolerances.

Biography

Vintila Iuliana is actually Associate Professor, PhD in Food Science and Engineering. She is author of 23 books and book chapters in international and national publishing houses (Elsevier, Wiley, Lambert, etc.), first author and co-author for 19 articles in ISI journals and relevant ISI proceedings, 107 BDI scientific papers indexed in recognized international databases, articles presented in national & international conferences and published articles revues. Also, she is member of prestigious international organization such European Federation of Food Science and Technology (2009), Co-Chair (since 2013) and Chair (since 2022) of Nutrition WG in Global Harmonization Initiative, International Society of Food Engineering (2010), Balkan Environmental Association (2008), Global Environmental Standard (GES) Community of Interest (2011), European Academy for Education and Social Research (2012). She acts as international projects Expert for European Science Foundation, Eurostar Program, EC « Expert area in the Participant Portal » and « Connecting Europe Facility », Horizon Europe Program, EU TAIEX, COST, EACEA, Erasmus Mundus (2010). She is Guest Associate Editor and Research Topic Editor for “Frontiers in Food Science and Technology”, Regional Editor “Advance Journal of Food Science and Technology”, Academic Editor “European Journal of Nutrition & Food Safety”, Editorial Board Member SciEdTech, Editorial Board Member “African Journal of Water Conservation and Sustainability”, “EC Nutrition” Editorial Board, Editorial board “Clinical Journal of Nutrition and Dietetics”, Editorial Board “Discoveries in Food Technology and Nutrition Sciences”, etc.

Prof. Jashbhai B. Prajapati

Chairman, Indian Dairy Association (West Zone), Mumbai

Ex. Chairman, Verghese Kurien Centre of Excellence, IRMA

Ex. Principal & Dean, SMC College of Dairy Science, AAU, Anand-388110, Gujarat

Milk in nutrition and health

Milk is a nearly complete food having all most all the nutrients required by the body except that it lacks fibre and has limited iron. Milk and milk products are playing very important role in human nutrition since ancient times. They are also known to confer several health benefits apart from prevention of several diseases. Dairy based foods can be a very good tool to achieve United Nations SDG-2, as they offer a great potential to tackle the problem of malnutrition and food security, especially in developing countries of Asia, Latin America and Africa. Milk is a natural lacteal secretion and is a treasure of easily assimilable nutrients. Its unique nutrients and their presence in a particular matrix, make milk a super food.

Milk fat has high content of Short Chain Fatty Acids (SCFAs) and Medium Chain Fatty Acids (MCFAs), which exhibit various regulatory and signalling functions. The most characteristic fatty acids for bovine milk fat are Conjugated Linoleic Acid (CLA) and butyrate. CLA is known to have several therapeutic benefits. Docosahexaenoic Acid (DHA) is an omega-3 fatty acid essential for brain development during pregnancy and early childhood. In milk, fat globules are covered with membrane (MFGM). The MFGM components such as sphingomyelin and gangliosides, improves the cognitive score of infants apart from several

Biography

Professor JB Prajapati is a Dairy Technologist with Ph.D. in Dairy Microbiology. He served at the Faculty of Dairy Science for 40 years and retired as its dean in 2020. He is a renowned probiotic food scientist, with over 400 publications. He is the founder of Swedish South Asian Network on Fermented Foods and have organized several conferences and training programs to promote fermented foods for health and nutrition. He is widely travelled across the globe and receipt of several awards for his research work. At present he is serving as the Chairman, Indian Dairy Association (West Zone), Mumbai.

nutraceutical properties. Milk contains 3 to 4% protein, which comprise of 80% casein and 20% whey proteins, mainly α-lactalbumin and β-lactoglobulin. Milk proteins contain all nine essential amino acids, while most plant proteins are incomplete, as they are missing at least one or more of the essential amino acids. Hence dairy in diet is essential for nutritional security of large lacto-vegetarian population. Whey proteins of milk, contain branched chain amino acids which are very useful for building muscle. Milk proteins produce biologically active peptides which are proved to have antioxidant, anticarcinogenic, antihypertensive, immunostimulatory, antimicrobial and other properties. It contains high tryptophan content which is precursor of serotonin, important for sleep and control of anxiety. Milk proteins possess the greatest potential to provide satiety signals.

Lactose is a unique sugar present only in milk, which has glucose and galactose. Galactose is required in synthesis of gangliosides which are component of glycolipid. This glycolipid is essential in formation of brain tissues. Lactose also increases absorption of minerals like calcium, magnesium & zinc. Lactose has Lower glycemic index (46) as compared to sucrose (66). Lactose and lactulose have conditional prebiotic effect to support health gut flora.

Milk is an important source of micronutrients including thiamin, vitamin B6 and zinc that work in concert with other B vitamins like pantothenic acid to help convert your food into energy and magnesium, which also helps to build strong bones. Plus, milk has selenium, which works with vitamin A to help maintain a healthy immune system. The major milk mineral is Calcium, which is more easily absorbed than any other source. Ca and P in the diet helps build and maintain strong bones. Lactose and vitamin D play a role in enhancing calcium absorption. Thus, milk is a capsule of essential, available and useful nutrients for the body.

Dr. Kasiviswanathan Muthukumarappan*, Tejaswi Boyapati, Dr. Ren Yang

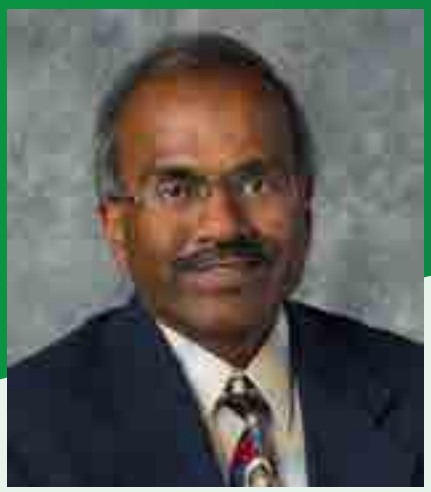
Department of Agricultural and Biosystems Engineering, South Dakota State University, Brookings, SD 57007, United States

Predicting *Salmonella* inactivation in water from bubble sparkling cold plasma treatment

Microbial contamination in food and water poses significant health risks, and conventional treatments have limitations. Cold Plasma technology offers a non-thermal alternative, generating Reactive Oxygen and Nitrogen Species (RONS) like ozone, nitrate, nitrite, and hydrogen peroxide. However, predicting microbial inactivation from cold plasma treatment is challenging due to numerous influencing factors. This research attempts to correlate microbial inactivation in water with the generation of RONS from a BSD cold plasma reactor.

Cold plasma was generated in air bubbles using a BSD reactor operated at frequencies ranging from 500 Hz to 2500 Hz, and the plasma bubbles were instantly passed through 100 ml of deionized water at a flow rate of 2 L/min. The microbial inactivation study involved inoculating water samples with *Salmonella* cocktail culture (S. Enteritidis PT30 STCC BAA-1045, S. Mbandaka 69858, and S. Tennessee K4643) at inoculation level of 9.1 log CFU/g followed by plasma exposure at specified frequencies and durations (1--6 min, varying by frequency). Surviving populations were quantified via serial dilution, incubation, and plate counting. For the quantification of chemical species such as pH, Ozone (O_3), Nitrate (NO_3-), nitrite (NO_2-), and Hydrogen Peroxide (H_2O_2), water samples were treated under

Biography



Dr. Kasiviswanathan Muthukumarappan is a distinguished professor in the agricultural and biosystems engineering department at South Dakota State University. He has led multiple research projects and advised students in academic and research activities. His work focuses on food and bioprocessing standards development, resulting in over 200 peer-reviewed publications and 350 presentations. He has revised three ASABE standards, served on various committees, and held leadership roles within the Food and Process Engineering Institute (FPEI). Dr. Muthukumarappan has received numerous awards for his contributions to research and education in food and bioprocess engineering at both national and international levels.

conditions microbial inactivation was evaluated and tested using standardized colorimetric test strips. Correlations between microbial inactivation and chemical concentrations were analysed, and mathematical models were developed to describe the relationship.

Higher frequencies accelerated the inactivation of *Salmonella enteritidis*, achieving a 4.0 log CFU/g reduction in 70 seconds at 2500 Hz, compared to 6 minutes at 500 Hz. Nitrite, nitrate, hydrogen peroxide, ozone, and pH concentrations varied with frequency and time combinations, with ranges of nitrite (0.5–10 ppm), nitrate (10–100 ppm), hydrogen peroxide (0.5–10 ppm), ozone (0.05–0.8 ppm), and pH (4.0–6.0). Peak concentrations were achieved more quickly at higher frequencies and gradually at lower frequencies. A predictive model revealed a strong correlation between microbial inactivation and ozone generation.

This research suggests that the accumulation of RONS in water from cold plasma treatment can be used as an indicator of microbial inactivation.

Lars T. Fadnes[1,2]* MD, Anindita Tasmin Onni[1,2] MD, Matteo Perillo[3] PhD, Elaheh Javadi Arjmand[1,2] MD, Lise M. Thomassen[1,2] MD, Marco Amato[3] MA, Rajiv Balakrishna[1] MD, Antonello Lorenzini[3,4] PhD

[1]Department of Global Public Health and Primary Care, University of Bergen, Norway

[2]Bergen Addiction Research, Department of Addiction Medicine, Haukeland University Hospital, Bergen, Norway

[3]Department of Biomedical and Neuromotor Sciences, University of Bologna, Italy

[4]Biostructures and Biosystems National Institute (INBB), Italy

Summarizing background evidence for associations between food choices, morbidity and mortality: Using a systematic umbrella review framework

Healthy eating is linked with a range of favorable health outcomes. We have previously published the Food4HealthyLife model that estimated the impact of dietary changes on life expectancy but has not yet modeled disease-specific morbidities. The objective of this work was to summarize background evidence for associations between food choices, morbidity and mortality using a systematic umbrella review framework. We conducted four systematic umbrella reviews, focusing on all-cause mortality, type 2 diabetes, obesity, and cardiovascular diseases. We systematically searched Medline, Embase, Web of Science, and Epistemonikos for systematic reviews and meta-analyses. In total, 4220 articles were screened for

Biography

Lars Fadnes is a professor at the University of Bergen and research group leader at Haukeland University Hospital. He is a medical doctor and is a specialist in general practice and is working with research on food choices and associations with chronic diseases. He has published more than a hundred scientific papers, many of these with high impact.

the mortality umbrella, 5074 for the diabetes umbrella, 2925 for the obesity umbrella, and 2448 for the umbrella on cardiovascular diseases. In total, 41 articles were included in our analysis on mortality, 67 on diabetes type 2, 13 on obesity, and 127 on cardiovascular diseases.

Our results showed that a high intake of whole grains was associated with reduced mortality, reduced risk of type 2 diabetes and obesity, as well as cardiovascular diseases. Inversely, red and processed meats and sugar-sweetened beverages were associated with increased mortality, increased risk of type 2 diabetes and obesity, as well as cardiovascular diseases. Nuts, vegetables, legumes, generally had beneficial associations to several of the outcomes.

In conclusion, our comprehensive approach for the most up-to-date evidence supported our former analyses supporting health benefits of high intakes of whole grains, nuts, fruits, vegetables nuts and legumes, and less of red and processed meats as well as less sugar-sweetened beverages.

Villaseñor M. J[1,3]*, Villamayor N[1,2], Ríos Á[1,2]

[1]Regional Institute for Applied Chemistry Research (IRICA), Ciudad Real, Spain

[2]Department of Analytical Chemistry and Food Technology, Faculty of Chemical Science and Technology, University of Castilla-La Mancha, Ciudad Real, Spain

[3]Department of Analytical Chemistry, Industrial Engineering School, University of Castilla-La Mancha

Self-assembled synthesis of food-grade vitamin D_3-loaded mixed T60/QS nanomicelles with enhanced delivery capability: Physico-chemical characterization, gastrointestinal digestion and release kinetics

Within contemporary nutrition trends, there is a growing focus on enhancing the stability and bioavailability of key bioactives compounds through the development of nanoencapsulation systems. One noteworthy approach is the synthesis of nanomicelles.

In this work, our objective relies on incorporating Vitamin D_3 (VD_3) into nanomicelles. VD_3 plays a crucial role in bone health, as deficiency (≤29ng·mL-1) makes individuals susceptible to diseases such as cancer, type 2 diabetes, sarcopenia, etc. To synthesize nanomicelles, we opted for Tween 60/Quillaja Saponin (T60/QS) as emulsifiers after evaluating them alongside other potential food-grade surfactants (Tween 80, 40 and 20 as synthetic surfactant and soy lecithin as natural one), considering parameters relative to size, zeta-potentical, polydispersity index and Encapsulation Efficiency (EE). The resulting amphiphilic surfactants self-assembled

Biography

Dr. Mª Jesús Villaseñor completed her PhD in Analytical Chemistry at 28 years old, at Castilla- La Mancha University in derivative spectrophotometry and electrochemistry fields. Later, she carried out two postdoctoral collaborations with the Institute of Organic Chemistry (CSIC) and the University of Amsterdam (Analytical Chemistry and Polymers Area) being specialized in gas chromatography-mass spectrometry and different modes of capillary electrophoresis respectively. Nowadays her research interests are focused on the development of new optical and electrochemical sensors nanomaterials-based and on the development, synthesis and analytical characterization of new organic nanomaterials within the research group SAMAN (Simplification Analytical MinituArization and Nanotechnologies). She is currently tenured professor in the Department of Analytical Chemistry and Food Technology in the University of Castilla- La Mancha, SPAIN.

into nanomicelles that were satisfactorily monodispersed and spherical, with a particle size of 49.6 nm, polydispersity index: 0.34, zeta-potential of -32.6 mV and EE of 90%.

A comparative analysis was conducted between the synthesized nanocarrier and existing commercial nanomicelles and liposomes containing equivalent VD_3 concentrations. These samples were exposed to UV light (365 nm) and heating at 80º for up to 30 hours. All nanocarriers demonstrated enhanced stability compared to free VD_3, with liposomes exhibiting the highest stability, while the synthesized nanomicelles showed superior stability at 80º (cumulative degradation rate, CDR, 35%) compare to commercial nanomicelles (CDR 65 %).

Understanding the release pattern of bioactives from formulations is crucial, especially for modified and immediate release dosage forms. Various mathematical models were employed to analyze experiment data, including zero order, first order, Korsmeyer-Peppas, Higuchi, Weibull, Hixon Crowell and Beaker-Lonsdale models, enabling effective formulation design. Moreover, in vitro studies indicated that VD_3NMs exhibit superior stability in simulated gastric fluid, with subsequent controlled release primarily occurring in simulated intestinal fluid. T60/QS mixed micelles can effectively shield VD_3 in acidic environments while facilitating sustained release, presenting practical advantages for VD_3 protection an delivery in the food industry.

Myoungsook Lee[1,2]*, Jiha Kim[1,2], Youngho Sorn[2]

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Impact of BDNF rs6265 variation on obesity and personalized diets in Koreans

Recently, the Direct-To-Consumer (DTC) genetic testing system has been implemented in Korea, allowing individuals to obtain genetic information for non-clinical purposes. Although genes such as FTO, MC4R, and BDNF have been approved as candidate obesity-related markers for increasing BMI in Korea, further scientific evidence is warranted. BDNF, which is highly expressed in the hypothalamus, plays a role in appetite suppression and energy expenditure through physical activity. The Val66Met polymorphism (rs6265) is known to be associated with disordered eating behaviors, leading not only to obesity but also to an increased risk of depression and Alzheimer's disease.

Among the total participants (n=231), the Minor Allele Frequency (MAF) of BDNF (rs6265) was 47.4%, which is approximately three times higher than that reported for Europeans (19.4%) and Americans (14.8%). The proportion of heterozygous and mutant genotypes (H+M) was significantly higher in the obese group compared to the Wild-type (W) group. For this reason, BDNF was selected as a primary candidate gene for this study, instead of FTO or MC4R. Analysis of gene-obesity interactions showed that obese individuals carrying H+M exhibited lower resting metabolic rate per body weight (RMR/BW), higher Waist-To-Hip Ratio (WHR), elevated blood liver damage markers (ALT/

Biography

Prof Myoungsook Lee received BS & MS from Sook-Myung Women's University in Seoul, Korea, and I had doctorate from the Ohio State University, USA, in 1993. Since I got a faculty position at the Food and Nutrition in Sungshin Women's University, Seoul, I have been published 180 research articles and 22 books related to "the Precision Nutrition in obesity", and I became a regular member of the National Academy of Medicine of Korea. Several research awards were received from NIH(USA), the Ministry of Agriculture, Food & Rural Affairs(2018 & 2024), the Ministry of Health & Welfare(2020) and so on.

AST), HbA1c, Total Cholesterol (TC), and LDL cholesterol. Compared to W carriers, H+M carriers consumed more sodium and only about one-fourth the amount of polyunsaturated fatty acids (PUFA, particularly ω-3 and ω-6). Therefore, sodium reduction is essential for obese individuals with H+M genotypes. Risk factors for increased BMI and RMR included BDNF (H+M), male, lower age, higher WHR, elevated ALT, higher leptin, and lower HDLc. For WHR increase, significant factors were BDNF (H+M), female sex, lower RMR/BW, elevated ALT, and higher vitamin A intake.

In conclusion, obese individuals carrying the H+M genotype should reduce sodium intake and increase the intake of essential fatty acids (ω-3 and ω-6) and vitamin A. In particular, obese men should also reduce alcohol consumption to maintain healthy liver and lipid profiles, thereby preventing obesity progression. Given that the MAF of BDNF in Asians (44.5%) is similar to that of Koreans, the findings of this study may be applicable to other Asian populations as well.

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Bioactive compounds and stability of fiber and protein enriched salted snacks by olive paste and brewer's spent grain

This research project aims to formulate functional snacks through the upcycling of by-products from two production chains: the brewing and the olive oil production chains. The salted snacks were formulated by partially substituting wheat flour with Brewers' Spent Grains (BSGs) and Olive Paste (OP). OP is characterized by a well-balanced lipid profile, rich in mono and polyunsaturated fatty acids, and an interesting content of antioxidant compounds. BSGs are characterized by high fibre and protein contents and by the presence of antioxidant compounds, moreover, BSGs fat is rich in mono and polyunsaturated fatty acids. These characteristics make OP and BSGs particularly suitable as functional ingredients for the food industry and for the formulation of functional products. BSGs were added, accounting for 12% and 30%, both wet and dry, and OP was added, accounting for 8%, both pre-debittered and untreated. This study has underlined that replacing wheat flour with BSGs and OP allows for a significant increase in total dietary fibre, protein, and phenolic compounds compared with

Biography

Prof. Ombretta Marconi studied Chemistry at the University of Perugia, Italy and graduated as MS in 1997. She then joined the research group of Prof. Fantozzi at the Department of Agricultural, Food and Environmental Sciences (DSA3) of the University of Perugia. She received her PhD degree in 2005 at the University of Bologna. Since 2018 she has been Associate Professor in Food Science and Technology at the DSA3. Since 2021 she is the Director of the Italian Brewing Research Centre. She has published more than 100 research articles in SCI (E) journals.

the reference snack. The fibre content allows for a “high in fibre” label, and the protein content for a “source of protein” label for all the tested recipes. The resulting snacks showed a reduction in total carbohydrates and sugars compared to 100% wheat flour snacks. The fat content of the functional snacks was higher than the control, although slightly richer in unsaturated fatty acids. The snack enriched with 30% dried BSGs and 30% of non-pre-debittered OP reached also the EFSA claim of being “high in unsaturated fat”. The formulation of snacks by partial substitution of wheat flour with BSGs and OP can be an efficient and feasible strategy for the valorization of these by- products throughout the production of functional food.

This research was funded by Italian Ministry of the Environment and Energy Security on the call for the co- financing of research projects aimed at the development of technologies for the prevention, recovery, recycling and treatment of waste not falling within the categories already served by supply chain consortia, the eco-design of products and the correct management of the related waste – 2021 edition (D.D. 9/12/2021, n. 83). CUP J93C22000330006.

Raffaella Conversano

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The dis(ease)ability theory conclusion: Is true narration possible? ... With AI... simple!!!

In the assumption of the importance of Functional Narration, the primary focus of my pedagogical theory, not only as a cognitive path of the person in every sector of common life, from education to the medical field but, above all, in the sector of planned nutrition depending on the various pathologies/intolerances/cultural/religious/ territorial identities, Artificial Intelligence aims, with its powerful system, to be the ideal virtual place rethought as a "facilitator" of knowledge aimed at achieving maximum personal autonomy for everyone, channeling the focus on the “how” of the technological environment must be interpreted. “It is reasonable to hypothesize that the instrumental use of AI will increasingly influence our way of life, our social relationships and in the future even the way in which we conceive our identity as human beings.” (Pope Francis G7 14/6/'24).

And it is precisely in this synthesis that the innovative thrust of its use in Raffaella Conversano's last operational step materializes, in its wise and fully intentional use at the true service of science and the person, giving the possibility of "deciphering" and " give voice” in contexts that are difficult for normal life. Thanks to the creation of a prototype of which I led the construction, we have given face, voice and content with a tool which, if used well- and the food sector has various sectors and channels of use-will give the right turning point to this that the

Biography

Born in Fasano, she is: Teacher specialized in Special Teaching Role (Support) at the IC “Giovanni XXIII-Pascoli” of Fasano (BR), Media Educator, Contract Professor of Special Teaching Laboratory: Communication Codes of Language Education at the “Aldo Moro” University of Bari and the “San Francesco D'Assisi” University of Free Time Fasano (BR), Academic Member of the Communication Institute of Greece (COMING) Athens and Academic Member of the Scientific Committee of the International Conference on Communication and Management and Academic Member of the Athens Institute for Education and Research (ATINER) and academic member of the Mass Media and Communication Research Unit; Honorable Editor for American Journal of Biomedical Science & Research. She is the author of 61 global publications. Her field of research focuses on the strategic use of educational technologies in the field of disabling pathologies in general; the application of Media Education conducted on serious, very serious cases and cases with rare disabilities have always achieved educational successes

current market demands. With this prototype we analyzed the everyday usability of the new vision and its application impact through characteristic analyzes and comparisons, purposes and the various operational contexts. The work I proposed presents a new way of reviewing technologies and its applications in full intentional interpretation, laying the foundations of a project capable of transmitting the fundamental, historical and theoretical knowledge of all the languages useful for communicational socialization. IT ignorance does not consist in "not knowing" how to use (potential hypothesis) or in "using" (intentional hypothesis) the technological tool but rather in "not knowing" what use of it is being made, why and functional for what! !!, in the search for increasingly productive solutions for the people involved. Ergo, technologies should not be used for their own sake but it is necessary to think about these tools in a technologically correct way, exploiting technology and "its intentionality of being" in an adequate way, to make the world accessible in a culturally broad way. Therefore, we have to aim to find actions that solve the problems and not operate by making the problem a set of problems as a corollary of the system around an objective to be achieved.

in different study contexts. She is the author of the innovative Pedagogical The “Dis(ease)Ability” Theory. She has been appointed President and official signatory of the documents and certifications as well as Member of the Scientific Committee of FAT2024, a Euro-global event that will be held in Rome from 16 to 18 September 2024.

Dr. Rita Singh Raghuvanshi*, Apurva

Department of Food and Nutrition, G. B. Pant University of Agriculture and Technology, Udham Singh Nagar, Uttarakhand, India

Agricultural by-product for nutrition security: The case of corn silk

This research advocates for a paradigm shift in how agricultural byproducts are perceived, positioning corn silk as a vital player in the global effort to achieve sustainable nutrition. Its transformation from waste to super food exemplifies the intersection of health, sustainability, and innovation, paving the way for broader applications in functional foods and nutraceuticals. The global challenge of achieving sustainable nutrition and combating non-communicable diseases necessitates innovative approaches that maximize the health benefits. Corn silk, the delicate strands found within maize husks, is often discarded as waste despite its rich nutritional profile and bioactive potential. This research explores the transformation of corn silk into a nutrient-dense super food, emphasizing its implications for human health and sustainable nutrition. Corn silk is a natural reservoir of macronutrients (16.9g/100 g protein) and micronutrients along with excellent dietary fiber content (52.2 g/100 g). These components are associated with significant health benefits, including potent antioxidant (10.18 mg TE/100g) and anti-inflammatory properties that combat oxidative stress and inflammation, two underlying factors in many chronic diseases. Corn silk also exhibits hypoglycemic effects (pGI 57.6), making it valuable for managing diabetes, and has been shown to support kidney health through its diuretic and nephroprotective properties. Its ability to regulate blood sugar levels may also help control hunger and prevent overeating, supporting weight loss efforts. Emerging studies further suggest its

Biography

Dr. Rita Singh Raghuvanshi, an Emeritus Scientist at G.B. Pant University of Agriculture and Technology, Pantnagar, is a renowned expert in Foods and Nutrition with over 40 years of academic and administrative experience. She has served as Dean of the College of Home Science for 17 years and contributed significantly to national nutrition programs and educational reforms. A Ph.D. in Nutrition from IMS, BHU, Varanasi, she has authored over 150 research papers and numerous policy materials. Her work includes international collaborations, global academic representation, and impactful research on nutritional assessment, public health policies, nutritional composition and uses of underutilized novel foods and community nutrition advancements in India.

role in regulating blood pressure and enhancing immune function, making it a holistic addition to functional foods. The research also focuses on practical applications of corn silk, highlighting its potential in developing herbal tea and tinctures, nutraceutical supplements, and dietary powders. Corn silk, rich in dietary fiber and bioactive compounds, offers potential benefits for managing constipation. Its high fiber content helps relieve constipation by improving bowel movement regularity and supporting gut health. Additionally, corn silk's diuretic properties aid in reducing bloating and water retention, contributing to a feeling of lightness. Furthermore, its prebiotic effects may improve gut micro biota, enhancing metabolism and satiety. This research underscores the need to repurpose agricultural waste like corn silk, not only to reduce waste but also to contribute to global nutritional security and health. By offering an affordable, nutrient-rich resource, corn silk can provide economic opportunities for farmers and the food processing industry while promoting sustainable agricultural practices.

Saïd Bouhallab*, Ghazi Ben Messaoud

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Liquid-liquid phase separation in heteroprotein systems: Specificity and recent advances

Liquid-Liquid Phase Separation (LLPS) is a captivating phenomenon in which a uniform component mixture spontaneously divides into two liquid phases, a component-rich phase (complex coacervates) in equilibrium with a component poor phase. It is prevalent in soft matter and highly relevant to design innovative objects and materials for food, cosmetic and pharmaceutical applications. LLPS is observed in mixtures involving a diversity of bio-polymers and is driven by environmental factors and component properties. It is a dynamic assembly process that leads, in solution or in vivo, to the formation of micrometric droplets, which are referred as biomolecular condensates, membrane less organelles, liquid droplets or complex coacervates, depending on the scientific community. In this presentation, I will focus on LLPS that occurs in binary cationic and anionic protein mixtures (heteroprotein systems, HPCC). My talk will summarize the specificality and genericity of heteroprotein complex coacervation based on our extensive multiscale (molecular to macroscopic) studies on lactoferrin/lactoglobulin and lactalbumin/lysosyme protein complex coacervates. I will briefly review aspects that are of particular interest in HPCC: formation dynamics involving primary building blocks; main driving forces; physical and chemical properties; functions and applications. Throughout studied binary protein systems, the route to complex coacervation involves the formation of intermediate hetero-oligomers specific for each binary system. Dimers, tetramers,

Biography

Dr. Saïd Bouhallab is currently a senior scientist at INRAE France, leading a research group in Rennes at STLO on physico-chemistry of food proteins. The group develops multiscale approaches with the aim to generate new supramolecular structures. After his PhD in molecular pharmacology, he joined INRAE in 1989, and since 2005, his research interest lies in applying fundamental knowledge to the exploration of the fascinating properties of food protein assemblies and search for their potential uses. He has supervised more than 30 PhD students and Postdoc and published more than 150 peer-reviewed research articles.

or pentamers were identified. While the mechanism behind the association of these primary units into building blocks and nanocomplexes and their growth to form complex coacervates remain elusive, I will present and discuss the main relevant structural and physicochemical parameters for HPCC. Finally, the challenges and future research directions in particular how HPCC can be explored in the food sector for the encapsulation and protection of bioactives or to modify the viscosity of the food matrices will be discussed.

Victor F. Stukach D.Sc. (Econ.), Professor

Consultant, Omsk State Agrarian University, Omsk, Russia

Domestic food aid to socially vulnerable categories of the region: Industrial concept of food aid infrastructure formation

Practical measures are proposed to help the needy segments of the population through the use of state support tools, motivating farmers to preserve soil fertility, and use withdrawn land as a resource for environmentally friendly food production. An assessment of the effectiveness and expediency of involving in the circulation of land withdrawn from agricultural circulation for the production of environmentally friendly food products was carried out. The project simultaneously solves the problem of rational land use, monitoring and forecasting of the state of land resources.

The issue of good nutrition is considered in the context of the health of the nation. Measures are proposed to improve the practice of using natural resources, including knowledge of methodological foundations in the educational process. The discipline "Infrastructure of food assistance to socially vulnerable segments of the region" has been introduced into the curricula of agricultural universities. A textbook with the same name has been published.

The possibility of creating an industrial formation-a production and logistics center is investigated, the functions and parameters, the scale of activity are determined. The mechanism of interaction of the production and logistics center with suppliers of raw materials for packaging and processing is proposed.

Biography

Victor Stukach received a diploma in agricultural economics from the Omsk Agricultural Institute in 1969. In 1998, he defended his dissertation for the degree of Doctor of Economics. Since 2000, he has been working as a professor at the Department of Management and Marketing of the Omsk Agrarian University (Russia). He created a scientific school "Problems of Development of the Infrastructural Agro-Industrial Complex of the Siberian Region", trained 44 candidates and doctors of science. He has 60 monographs and textbooks. Among them: foresight studies in the field of strategic management; transaction costs; informal institutions, organizational behavior, cultural code of the population. He has the honorary title "Honored Worker of Higher Education of Russia". In 2012, the Scientific and Industrial Chamber of the European Commission awarded Professor V. F. Stukach with the Gold Medal for the results of original research in the field of infrastructure.

The specialized production and logistics center will eliminate inefficient intermediaries, reduce storage costs and increase the share of agricultural producers in the final price for the consumer in the food chain.

The conditions that together provide economic and social effects of reducing the loss of raw materials, both on a regional scale and in the conditions of market interaction within the framework of public-private partnership, are considered.

The identified proportions and mechanisms for the formation and development of the system of internal food assistance to the population, practical recommendations are in demand for the regions of Russia, make it possible to implement systemic measures to ensure food security, develop human capital, agricultural production, and rational use of natural resources.

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ORAL PRESENTATIONS

Jeevarathinam Antony

Assistant Professor, Department of Home Science, V. V. Vanniaperumal College for Women, Virudhunagar, India

Germinated millet based foods to combat malnutrition world wide

Malnutrition is a serious and life-threatening condition often caused by a diet lacking in essential proteins, fats, vitamins and minerals. Malnutrition among children is one of the major health problems faced by the developing countries. Malnutrition in young children puts them at a higher risk of experiencing health problems such as stunted growth, mental retardation, and increased susceptibility to infectious diseases. Around half of the world's malnourished children are found in only three countries, India, Bangladesh and Pakistan. India accounts for about 40% undernourished children in the world, which is significantly associated with high rates of morbidity and mortality in the country. Malnutrition is influenced by economic, social, environmental and individual factors. A number of approaches have been taken to alleviate malnutrition. The dietary approach is more sustainable. In the present study, the millets were soaked for 24 hours and germinated for 96 hours. The germinated millet was subjected to cabinet drying and powdered. Then the nutrient content was analysed. It was showed that when the germination period was increased the protein, carbohydrate, vitamin C and iron were also increased. So, the 96 hours germination process was adopted for developing millets flour incorporated food products. It was then subjected for sensory evaluation. This study proved that, germinated millet could be utilized to prepare low-cost nutritious food products to prevent malnutrition, improve the health and the nutritional status of the people. The formulated various recipes from nutrient rich millets were popularized among rural people through lecture, demonstration and exhibition to alleviate the malnutrition.

Biography

Jeevarathinam Antony is currently working as Assistant Professor, Department of Home Science, V. V. Vanniaperumal College for Women, Virudhunagar. She has done her UG degree in V. V. Vanniaperumal College for Women, Virudhunagar. PG and M. Phil degree from V.H.N.S.N College, Virudhunagar. In addition she has also done Post Graduate Diploma in Computer Application from Time Institute Virudhunagar. She has 12 years of experience in teaching. Her fields of interest are Microbiology, Food biotechnology, Food Safety and Quality Control and Research. During this period she has been involved in the teaching of Undergraduate, Post Graduate and Certificate course students etc. She is actively involved in research projects for the department. She has been a member of Indian Academic Researcher Association. She has papers published and papers in reputed journals and colleges. She is currently pursuing her part time PhD in Microbiology at M.K University, Madurai.

Aboubacar Oumar Bangoura[1*], Djiba Sidimé[1], Ding Xiaolin[2], Tang lili[2], Qian He[2], Yao Weirong[2]

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Effect of bioactive calcium chelated soy oligopeptides compare to calcium chelated corn oligopeptides

Among human needs, nutrition is priority. There are many people in the world whose diet are not meeting the recommended daily level of calcium, mainly the target group (children and their mothers, pregnant and nursing women, old women). Calcium plays an important function in the body, especially for bones and teeth, but its absorption from foods remains inefficient even though many foods contain sufficient amount of calcium. However, certain proteins and amino acids can stimulate calcium absorption (Martha. 1983). Among these, oligopeptides having chain length 2-10, preferably 3-6 derived from soy proteins. Oligopeptides are taken orally and is readily absorbed by the digestive tract (Minoru. 1988). The present research was undertaken to study the chelation of calcium to the oligopeptides prepared from soy and corn protein and their absorption by the digestive tract. Commercial defatted soy flour was solubilized in an aqueous solution at pH 9.0 to prepare a soy protein for enzymatic hydrolysis. Crude corn protein powder was directly hydrolyzed. Hydrolysis was carried out using an alcalase A/S Bagaswaerd, to prepare oligopeptides from either soy and corn protein, called Soy Protein Hydrolysate (SPH) and Corn Protein Hydrolysate (CPH) respectively, at higher Degree of Hydrolysis (DH). The initial defatted soy flour and crude corn protein concentration was set at 15% and 10% respectively. The temperature was 50° C, alcalase substrate ratio 2%, pH 9.0, hydrolysis time 12 hours. Following hydrolysis, 56.04% and 47.8% of protein was extracted respectively from SPH and CPH. Free amino groups, ash and moisture contents were also determined. High-Performance Liquid Chromatography (HPLC) measurement showed a mixture of proteins, oligopeptides, and amino acids in SPH and CPH. 88.26% represented oligopeptides from SPH and had molecular weights of 281.11, 676.99 and 1219.98 Daltons; which correspond to dipeptides, pentapeptides and decapeptides. 73.01% represented oligopeptides from CPH with molecular weights of 413.66 and 288.96 Daltons, which corresponded to dipeptides and tripeptides. Binding was carried out by using 0.1 mole/L of $CaCl_2$ (ratio hydrolysates to $CaCl_2$ solution 1:1) at 60° C and pH was adjusted (6.0 to 7.5). Calcium bound to the oligopeptides was obtained by alcohol precipitation and without alcohol precipitation. Alcohol precipitation yielded a higher percentage of chelated calcium to soy and corn oligopeptides, named Calcium Chelated Soy Oligopeptides (CCSO) and Calcium Chelated Corn Oligopeptides (CCCO) respectively (Aboubacar. 2024). Chelated calcium was collected in the precipitate with alcohol precipitation respectively 32.22 % and 37.57% for CCSO and CCCO.

The effect of pH on oligopeptides affinity for Ca^{2+} was investigated. Bitter taste has been eliminated for both CCSO and CCCO. The color of both products CCSO and CCCO was also improved. Both methods AAS and ISEPM were carried out to evaluate the amount of chelated calcium in CCSO and CCCO. The

absorption and retention rate of these complexed oligopeptides of calcium, indicated a satisfactory result. The consumption of these products is a good way for self-monitoring in order to find a solution to control calcium deficiency diseases.

Keywords: Enzymatic Hydrolysis, Soy Oligopeptides, Corn Oligopeptides, Calcium Binding, Calcium Chelated, Calcium Deficiency Diseases.

Biography

Aboubacar Oumar Bangoura has been the Head of Advanced Studies Services at UGANC since Dec. 2022. He served as the Minister of Higher Education and Scientific Research at Guinea in 2020. He was a Professor and Director of Research on 16 November 2020. He was the Head of the Division of Advanced Studies Services at UGANC in March 2018. He was an Assistant Professor and Research Lecturer in 2013. Aboubacar Oumar Bangoura was an Assistant Vice-rector in charge of Scientific Research at UGANC in 2012 and then Assistant Lecturer in 2007. He holds a PhD in Food Sciences from the School of Food Sciences & Technology, Southern Yangtze University, China in 2005 and an MSc in Human Nutrition from the School of Food Sciences & Technology, Wuxi University of Light Industry, China in 2000. He has published more than 20 original research articles, from the world highest scientific publishing houses.

Adama Diarrassouba TUO

Centre de Recherches Océanologiques d'Abidjan/Abidjan, Côte d'Ivoire

Trace metals bioaccumulation in oysters (*Crassostrea gasar*) from fresco lagoon (Côte D'ivoire, West Africa)

For the human risk assessment associeted with a highly consummed oyster (*Crassostrea gasar*), the concentrations of seven trace metals (Pb, Cd, Ni, Cr, Co, Fe and Zn) were measured using an Atomic Absorption Spectrometer. Average values of physicochemical parameters were as follows: pH (7.1), salinity (10.09 ‰), temperature (22.7 ˚C), Total Disolved Solids (9.73 mg/L). Oysters' shell lenghs ranged from 4.2 cm to 11.5 cm, and the average water contents from 78.42 to 85.10 %. The mean concentrations were 91.4, 12.31, 38.06, 1199.06, 8.26, 578.23 and 454.04 mg/kg dry weight for Pb, Cd, Ni, Cr, Co, Fe and Zn. Estimated Daily Intake (EDI) of trace metals was calculated by mean oysters ingestion rate as 6.0 x 10-3 kg/day and 12.0x10-3 kg/day, on the basis of 15 and 30 oysters' consumption respectively for chlidren and adults. According to the Target Hazard Quotient (THQ) values, a carcinogic risk was observed for Pb (THQ>4.0), Cd (THQ>2.0) and Cr (THQ>60.0), either for chlidren and adults. The Hazard Index (HI) was also calculated to assess the risk link to all of the seven trace metals. HI values ranged from 41.77 to 115.99 for chlidren and from 33.41 to 92.75 for adults. These highest HI values are associated to three metals as Pb, cd and mainly Cr with particularly high concentrations. The present study as highlithed the carcigenic risks for inhabitants who consume oysters collected From Fresco Lagoon waters. These results demonstrate the need to control the quality of fishery products from artisanal fishing, such as oysters, for consumer's protection.

Biography

Dr. Adama Diarrassouba TUO received his PhD degree in physical sciences in 2013 at the Felix Houphouët-Boigny University (Côte d'Ivoire). In June 2013, he joined the chemistry research group at the Oceanological Research Center of Abidjan with research activities focused on the aquatic ecosystems' quality assessment. He's the head of the Environment Department since 2021 and author of several scientific articles and book chapters in his research area. Currently Associate Professor at the Department of Marine Sciences of the Polytechnic University of San Pedro (Côte d'Ivoire), he's in charge of ecotoxicology, toxins, and biocides courses.

Mahamat Hissein Ali[*], Coulibaly Gnellé Assita[2], Yepie Herbert Aubert[2], Anin Atchibri Anin Louise[2*]

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Evaluation of the nutritional status of elderly hemodialysis patients followed at the "La Renaissance" University Hospital Center in N'Djamena, Chad

Elderly patients on hemodialysis are particularly at risk of malnutrition. In addition to this specific factor, other elements contribute to the risk, necessitating a systematic evaluation of their nutritional status to improve their management and quality of life. The objective of this study was to assess the nutritional status of elderly patients undergoing hemodialysis. This was a cross-sectional, descriptive study involving 167 patients undergoing biweekly dialysis sessions, recruited from the nephrology department of CHU Renaissance in N'Djamena, Chad, over a period of 3 months. Nutritional assessment was conducted using anthropometric measurements (dry weight at the end of dialysis), biological tests, and a dietary survey. Malnutrition diagnosis was made using the Mini Nutritional Assessment (MNA) criteria. The mean age of participants was 74.27 years, with a male predominance, and the average duration of hemodialysis treatment was 7±3.8 years. The mean energy intake of patients during dialysis sessions was 21.26 kcal/kg/day, compared to 15.9±6.9 kcal/kg on non-dialysis days (p=0.001). More than half of the patients (72.5%) had experienced weight loss over the 6 months prior to the study, with 51.5% losing between 5 and 10%, and 12% losing more than 10%. The mean protein intake was 0.71±0.38 g/kg on dialysis days, significantly decreasing (p=0.005) to 0.53±0.28 g/kg on non-dialysis days. The mean Body Mass Index (BMI) was 22.4 ± 9.28 kg/m², with 47.6% of patients having a BMI<19 kg/m². Energy intake was insufficient in 91% of patients, with a notable deficit in protein intake. More than half of the patients (57%) had hypoalbuminemia (<35 g/L). Malnutrition was present in 71% of patients, with 49% showing moderate malnutrition and 22% severe malnutrition. Additionally, 57% of moderately malnourished patients and 68.5% of severely malnourished patients met more than two MNA criteria. The results showed that 67% of patients were malnourished, 21.14% were at risk of malnutrition, and only 11.76% had satisfactory nutritional status. Furthermore, 48% of patients exhibited hypoalbuminemia, indicative of protein malnutrition. Pre-dialysis creatinine levels were abnormally low (<900 mmol/L) in 75% of patients, suggesting malnutrition. Protein-energy malnutrition is a frequent and serious condition in elderly hemodialysis patients, significantly affecting their prognosis. Early detection is essential to reduce morbidity and mortality.

Keywords: Nutritional Status, Hemodialysis, Chronic Kidney Disease, Mini Nutritional Assessment.

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Investigating the effects of superchilling storage on the microstructure of beef meat

Superchilling offers a promising approach to extending the shelf life of fresh products beyond conventional chilling, without the adverse effects associated with freezing. The final quality of the product is primarily determined by the ice volume fraction and the properties of ice crystals, including their size, distribution, and location. To maintain optimal product integrity, the ice volume fraction must be precisely controlled within the range of 30% to 35% during superchilled storage. Additionally, ice crystals should be uniformly distributed throughout the product, and their growth must be minimized to preserve texture and quality.

Beef meat samples were partially frozen in an air blast freezer at -30°C (air temperature) and 58 W/m^2 K for 9 minutes prior to storage under different temperature conditions of -1.8°C, -2.8°C, -4°C, and -5°C for 21 days. The aim of this work was to study the microstructure of beef during superchilled storage. X-ray Microtomography (µCT) which is an advanced 3D imaging technique was used to visualize and quantify the evolution of ice crystals in superchilled beef meat samples during storage. This method provided in-depth analysis of ice volume fractions, ice crystal size and number as well as ice crystal distribution in terms of cumulative probability density functions. The analysis was done at four distinct time points: days 1, 7, 15, and 21.

The average initial ice volume fraction of the pre-frozen sample was 31%±.01 at day 0 (obtained immediately after partial freezing. Our results showed that both storage time and storage temperature had a significant impact on the microstructure of the beef meat. Moreover, a progressive growth of ice crystals was observed during storage, as evidenced by cumulative probability curves that depicted a higher proportion of larger ice crystals at -4°C and -5°C compared to -1.8°C and -2.8°C. These findings emphasize the importance of investigating microstructural evolution in superchilled storage because they have a direct impact on the final beef quality. Moreover, the use of a non-destructive 3D method for describing microstructure evolution during superchilled storage provided insights that will lead to a better control of the quality and safety of food throughout the cold chain.

Biography

Ms. Anjelina is currently doing her PhD in process Engineering at Paris Saclay University, under the supervision of Graciela Alvarez and Fatou Toutie Ndoye at the Refrigeration Process Engineering for Food Security and Environment Research Unit (FRISE) of INRAE, France. She has a master's degree of Food science from University of Reading, UK and a bachelor degree of Chemical and Process Engineering from University of Dar Es Salaam, Tanzania. She has published 2 research articles in SCI (E) journals.

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Consumer acceptance for cell-based seafood in EU: A multi-country study

The cell-based food industry is garnering significant attention from investors, including major corporations such as Nestlé and Tyson Foods, due to its potential to revolutionize the novel food market. However, in addition to overcoming technical and economic hurdles, the industry must also secure consumer acceptance. While research on cell-based meat has reached a certain level of maturity, there is a notable knowledge gap regarding cell-based seafood.

This study addresses this gap through a stated preference experiment, investigating consumer acceptance of cell-based salmon, tuna, and shrimp among residents of four European countries. This multi-country experiment is a pioneering effort, providing valuable insights into the preferences of consumers in countries with diverse profiles. The selected countries-Portugal, Hungary, the Netherlands, and Italy-exhibit distinct characteristics, with Portugal and Hungary representing the highest and lowest per-capita seafood consumption in the European Union, respectively. Furthermore, the Netherlands and Italy occupy opposing positions on the spectrum of "political" acceptance, with the Dutch government actively supporting research in this field and the Italian government imposing a ban on production and sale.

This research contributes to the growing body of literature on consumer acceptance of novel foods by shedding light on the willingness to pay of consumers across different countries, as well as the importance assigned to sustainability and safety certifications from a nutritional perspective. The findings of this study will provide valuable insights for stakeholders seeking to understand consumer preferences and behavior in the emerging cell-based seafood market.

Biography

Dr. Borriello is a Scientific Officer at the Joint Research Centre of the European Commission. He carries out research activities on the EU blue economy, including fisheries and aquaculture. He has previously worked in academia both at the University of Technology Sydney and at the University of Lugano, where he has focused his research on applied economics. He holds a PhD in Economics and a bachelor and master degree in Statistics.

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Nutritional status of children with cancer treated with D2O

Introduction: Assessment of the nutritional status of pediatric cancer patients is crucial for optimizing treatment outcomes and improving survival rates. Malnutrition in these children is common due to factors such as the disease itself, treatment side effects and altered metabolism.

The aim of this study is to assess the nutritional status of a sample of children with cancer at the time of their admission to hospital before starting their treatment. This work is part of an international survey conducted by the IAEA.

Materials and Methods: It is a descriptive cross-sectional study including 54 children aged between 2 and 15 years, diagnosed with lymphoma-type cancer and recruited from the pediatric Hematology-oncology department of the Children's Hospital of ibn Sina University Hospital in Rabat. Assessment of nutritional status at diagnosis is based on anthropometric measurements (Weight; Height; BMI Z-score (BAZ); Height for Age Z-score (HAZ)), A socio-demographic questionnaire was administered to determine the characteristics of the studied population.

Result: These are preliminary results. The size of the samples studied is 52 with age ratio 3,72. 57,4% are non-Hodking's Lymphoma and 42,6% are Hodking's Lymphoma, following residence area equal repartition is observed with 53,8 in urban area VS 46,2% in rural area, the most of the population has a monthly income between (106–300 euro). Nutritional status of the population studied showed that 28,8% are thinness, 7,7% have a severe thinness, 11,5 are stunting and 15,4% are overweight or obese.

Conclusion: Malnutrition and growth delay are present from the start of the disease in some cases, which means that management and regular monitoring are required during the treatment phase.

Keywords: Children With Cancer, Nutritional Status, Malnutrition.

Biography

Assia Elouari is 25 years old, Moroccan, married and mother of two children, she is a dietician nutritionist and registered in 2nd year doctorate at Ibn Tofeil University Kénitra. She work on the evaluation of energy expenditure and nutritional status of children with cancer from 3 to 15 years old by the use of nuclear techniques (deuterium). This is a project that is part of a CRP (Coordinate Research Project) with the IAEA (International Atomic Energy Agency), this project is part of the national strategy to combat non-communicable Diseases; 2020-2030; led by the Ministry of Health, which includes studies on cancer, in order to reduce its incidence in Morocco Monitoring the nutritional status of children with cancer is a key alternative to implement as soon as treatment is started, in order to improve its effectiveness and reduce its effects on the quality of life of patients. Our study has two main axes: The first will target the monitoring of the nutritional status of Moroccan children with cancer aged 2 to 15 years over a period of 12 months, using the doubly labeled water technique (D 2 and O 18), and targeting the measurement of children's energy expenditure during treatment.

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Development of analytical methods for the detection of food-relevant contaminants in polluted agricultural areas

The contamination of agricultural soils with persistent toxic substances represents one of the major threats to food safety, requiring highly sensitive analytical methodologies to accurately assess the transfer of pollutants from soil to plants intended for human or livestock consumption, especially in historically compromised areas such as Sites of National Interest (SINs). This research, conducted by the Istituto Zooprofilattico Sperimentale, aims to develop and validate analytical techniques for detecting environmental contaminants in spontaneous herbs growing near the Sacco River Basin SIN (Italy). The study is part of an agreement between the Italian Ministry of the Environment and Energetic Security (MASE) and Lazio Region for the implementation of safety and remediation measures in the area. Eighteen years after the designation of the Sacco River Basin as a SIN, this study aims to reassess contamination levels in riparian agricultural zones. The objective is to characterize these environments and evaluate the potential for the safe resumption of food crop cultivation while maintaining restrictions on agricultural use in areas where contamination persists.

To this end, analytical methods were developed and validated with a primary focus on the detection of Organochlorine Pesticides (OCPs) and inorganic elements. The method for OCPs combined a QuEChERS-based extraction with subsequent Solid-Phase Extraction (SPE) clean-up, followed by isotope dilution and Gas Chromatography–Tandem Mass Spectrometry (GC-MS/MS). Metal analysis was performed using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) after acid digestion. Validations were conducted in accordance with the guidelines provided in document SANTE/11312/2021 and the criteria established by Commission Regulation (EC) No 333/2007 (consolidated text). Additionally, an extraction protocol was developed for the determination of Polycyclic Aromatic Hydrocarbons (PAHs), aimed at providing a more comprehensive characterization of sample contamination. The method involved a Soxhlet extraction step, followed by clean-up using SPE-MIP cartridges to remove potential interferences. The purified extracts were then analyzed by High-Performance Liquid Chromatography with Fluorescence Detection (HPLC-FLD).

The analytical methods developed demonstrated excellent performance, achieving extremely Low Limits of Quantification (LOQs): 0.5 µg/kg for organochlorine pesticides, 10 µg/kg for inorganic elements, and 0.2 µg/kg for PAHs. These sensitivities, significantly below regulatory thresholds, ensure reliable risk assessment even in the presence of trace-level contamination. The validated protocols provide reliable tools for environmental biomonitoring, for the evaluation of direct/indirect human exposure to pollutants and can contribute to ecological risk assessment in historically polluted areas. Ultimately, their implementation may support the safe production of food in vulnerable ecosystems, helping to mitigate long-term impacts on both human health and the environment.

Biography

Dr. Barbara Droghei studied Chemistry at University of Rome, “La Sapienza”, Italy and graduated as MS in 2019. After an initial experience in a private company specializing in environmental analysis, she joined the Department of Chemistry at the Istituto Zooprofilattico Sperimentale Lazio e Toscana. Her current research work is centered on food safety, with a focus on the analytical method for determination of mycotoxins, pesticides, and heavy metals. Since 2023, she has been enrolled in the postgraduate School of Specialization in Food Science at the University of Rome Tor Vergata, Italy.

Biljana Bogdanovic

Quality department, Sunoko, Novi Sad, Serbia

Challenges in sugar production-food safety management systems

Sugar industry is one of the largest among the food industry. One plant processes around 8,000 tons of sugar beet daily and produces 1,150 tons of sugar. It can be said that sugar is a strategic product of Serbia. Through this book the products of the sugar industry will be introduced in one hand, and the high product safety requirement in the other hand. Due to unambiguous impact of globalization on modern business, one of the requirements set in front of manufacturers is standardization and certification of food safety and quality systems. This book provides an overview of the GFSI Standards-Global Food Safety Initiative and key factors which collaboratively drive continuous improvement in food safety management systems around the world with a vision "Safe food for consumers everywhere". Further, it provides an overview of the impact of the globalization process on sugar industry and applied GFSI approved schemes. The objective of this book is individual analysis of the GFSI approved schemes (FSSC 22000-Food Safety System Certification, BRC, IFS). Other standards applied in the food industry are also presented (ISO 14001, Kosher, Halal, Sustainable development of agricultural production)

Biography

Biljana Bogdanović is a Serbian expert in the field of Quality and Food Safety Management, with the experience over 20 years in Sugar Industry. She studied Pharmaceutical engineering at Technology University in Novi Sad and currently is working on her PhD for Food Industry. Biljana is constantly engaged in numerous projects regarding the Quality and Food Safety Management in Sugar Industry as a consultant, auditor and professor. She has published a book on food safety, which has been translated into 6 world languages. She is happily married and mother of two children.

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Monitoring ethylene oxide and 2-chloroethanol residues in food: A simplified quechers-based GC-MS/MS method for routine analysis

Ethylene Oxide (EtO) is a pesticide whose use in food has been banned in the European Union since 1991. However, recent contamination incidents have raised significant concerns for human health. In particular, high levels of EtO were detected in sesame seeds from India in September 2020, leading to an increase in contamination notifications under the Rapid Alert System for Food and Feed (RASFF). Despite regulatory interventions, EtO contamination has continued to be found in a wide range of food categories, including spices (e.g., ginger, caraway, white pepper), herbal teas (e.g., chamomile), food supplements, and additives such as xanthan gum.

In this context, the present study proposes a rapid and simplified QuEChERS-based method for the determination of ethylene oxide in various food matrices, based on its conversion into the proxy compound 2-Chloroethanol (2-CE), followed by quantification using isotope dilution coupled with Gas Chromatography–Tandem Mass Spectrometry (GC-MS/MS). Analyses were carried out using an Agilent 8890 GC system equipped with an Agilent 7010C triple quadrupole mass spectrometer and an Agilent 7693A autosampler. In contrast to the columns typically used in similar studies reported in the literature, this work employed an Agilent HP-5ms Ultra Inert column (30 m×250 µm×0.25 µm), routinely used in our laboratory for multi-residue analyses, to achieve chromatographic separation.

The method covers a range of food matrices and was validated in accordance with the SANTE/11312/2021 guidelines by evaluating linearity, Limit of Quantification (LOQ), selectivity, precision (under repeatability conditions), and accuracy (expressed as percent recovery). A total of 47 samples, mainly imported from India, were collected and analyzed as part of official control activities conducted in the Lazio region (Italy). The sample set included spices, dietary supplements, okra, oilseeds and pharmaceutical products. Notably, 2-chloroethanol was detected in four samples, and in one case, the sum of ethylene oxide and its metabolite exceeded the Maximum Residue Limit (MRL) established by European regulations. These findings further demonstrate the ongoing risk posed by ethylene oxide contamination and underscore the urgent need for continuous monitoring, robust analytical protocols, and risk-based regulatory action to ensure consumer safety.

Biography

Dr. Daniela Delfino is a chemist with expertise in proteomics and analytical chemistry. She obtained her degree from La Sapienza University of Rome and later completed a Ph.D. in Biochemistry at the Catholic University of the Sacred Heart. Her doctoral research focused on the proteomic characterization of biological fluids and tissues, aiming to identify novel biomarkers. Currently, Dr. Delfino is a researcher at the Istituto Zooprofilattico Sperimentale del Lazio e della Toscana. Her study focuses on the validation of analytical methods for the detection of contaminants, such as pesticides, heavy metals, and mycotoxins, in food and environmental matrices.

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Matrix effect in the analysis of paralytic shellfish toxins and tetrodotoxins: Implication for risk assessment

Paralytic Shellfish Toxins (PSTs) and Tetrodotoxins (TTXs) are potent natural neurotoxins with different chemical structures but similar poisoning symptoms and mechanisms of action. They block nerve signal transmission by binding to voltage-gated sodium (Na+) channels, leading to nerve and muscle paralysis.

PSTs are produced by marine dinoflagellates of the genera *Alexandrium, Gymnodinium*, and *Pyrodinium*, and accumulate in filter-feeding bivalve molluscs. Originally associated with pufferfish, TTXs are synthesised by symbiotic bacteria such as *Pseudoalteromonas* and *Vibrio*, and have recently been detected in gastropods, echinoderms, and other marine organisms.

Climate change has altered the geographical distribution of these toxins; notably, TTXs have been reported in European molluscs previously unaffected, raising new concerns for food safety and public health.

As part of the risk assessment of human exposure to marine biotoxins, it is pivotal to develop analytical methods that ensure reliable and robust quantitative performance, to provide accurate information on toxins occurrence in food products and support consumer exposure evaluation.

In recent years, several LC-MSMS methods have been developed as alternatives to the official LC-FLD method for PST analysis. One of the main issues is the matrix effect, which is the primary source of error in estimating the toxic equivalents of these substances.

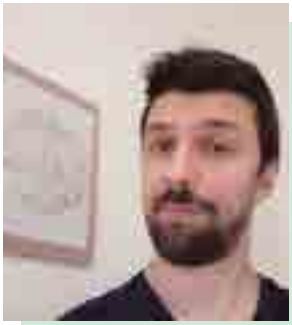
The aim of this work was to quantify and evaluate the Matrix Effect% (ME%) on target marine species involved in PST and TTX bioaccumulation. Molluscs, gastropods, and echinoderms were considered, and results showed that quantitative outputs are strongly influenced by ME%. The effect is strictly matrix-dependent due to different composition in terms of proteins, lipids, polysaccharides, and other minor components. This was particularly evident for the most toxic congeners (Saxitoxin, Neosaxitoxin, Decarbamoylsaxitoxin and Gonyautoxin 1 & 4) with ME% values ranging from –80% (ion suppression) to +190% (ion enhancement).

In conclusion, a comprehensive understanding and quantification of ME% is crucial for risk assessment. Inadequate control of matrix effects may result in inaccurate quantification of

contaminants, compromising exposure assessments and undermining the reliability of public health protections.

Biography

Dario Lucchetti graduated in Chemistry at the University of Rome “La Sapienza”, specializing in Food Science at the Faculty of Medicine of the University of Rome “Tor Vergata”. He is a contract professor at the Faculty of Medicine of the University of Rome “Tor Vergata”, teaching Food Chemistry for the degree program in “Prevention Techniques in the Environment and Workplaces”. He has been working at the Istituto Zooprofilattico Sperimentale del Lazio e della Toscana for over 20 years, with main research areas including food contaminants (pesticides and mycotoxins), natural toxins (algal biotoxins), process and fermentation contaminants (biogenic amines, nitrosamines) and food additives.



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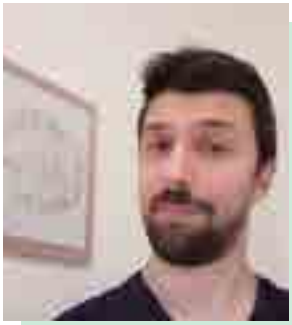
The role of oral bacteria in the perception of wine flavor

Wine flavours are released when the beverage is poured into a glass, but how individuals perceive these flavours can differ due to various factors. These factors include differences in taste buds, olfactory sensitivity, allergies, smoking habits, and sensory memory. Additionally, oral bacteria play a key role in personalizing aroma perception, as the composition of an individual's microbiota varies significantly. Human microbiota's alpha factor, influenced by genetic and environmental factors, can affect how wine molecules are processed. For a wine's aroma to be perceived, its molecules must transition from liquid to gas, either in the glass or mouth. These molecules often bind to sugar molecules, and enzymes in saliva, such as salivary amylase, break these bonds when the wine mixes with saliva. This chemical reaction allows the wine's gaseous molecules to travel through the retropharyngeal path and be sensed as a smell. Moreover, the pH shift when wine's acidic nature interacts with the more neutral pH of saliva can alter the chemical structure of molecules, changing their aromatic properties. Saliva composition can vary widely between individuals, influencing aroma release. For example, obese individuals tend to release fewer aroma molecules when tasting wine, with esters and acetates being reduced by 40-60%. Oral bacteria also impact the release of aroma molecules by synthesizing salivary enzymes, which vary depending on the bacteria present. Studies have shown that different individuals' oral bacteria can cause varying reactions to odorless glycosides from grapes, affecting the release of aromatic molecules like linalool. These findings suggest that both microbiota profile and body mass may play significant roles in aroma perception.

Biography

Davide Frumento has an extensive research background across various prestigious institutions. At Milan University and Harvard University, he worked on type 1 diabetes-related enteropathy. His research at Genoa University focused on adherence to antiretroviral therapy among HIV patients, the efficacy of new-generation anti-HCV medications, and the delayed onset effects of SIRT6 inhibition in in vitro and in vivo models of Multiple Sclerosis. He also investigated anti-influenza and anti-meningococcal vaccination strategies and contributed to Organic Synthesis research by characterizing pyrazolo[3,4-d] pyrimidine tyrosine kinase inhibitors. Additionally, he serves as an Adjunct Professor in Epigenetics at RomaTre University, where he explores generational trauma, and as an Adjunct Professor in Organic Chemistry at the University of Milan.



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Nutraceutical bioactive compounds as a booster for NK cells activity

Nutraceuticals, bioactive compounds derived from food sources, have gained significant attention for their potential to modulate immune function. Among the various components of the immune system, Natural Killer (NK) cells play a crucial role in the innate immune response, particularly in the detection and elimination of tumor cells and virus-infected cells. Recent research suggests that nutraceuticals may influence NK cell activity, offering potential therapeutic avenues for immune modulation. Several classes of nutraceuticals, including polyphenols, flavonoids, vitamins, and omega-3 fatty acids, have been shown to enhance NK cell proliferation, cytotoxicity, and cytokine production. These compounds work through various mechanisms, such as modulating signaling pathways, improving NK cell receptor expression, and enhancing cellular interactions within the immune network. For instance, polyphenols like resveratrol and curcumin have been demonstrated to boost NK cell activity by promoting the release of cytotoxic molecules and cytokines. Additionally, omega-3 fatty acids, commonly found in fish oil, are known to improve NK cell function by altering cell membrane composition and enhancing NK cell receptor signaling. Moreover, micronutrients such as vitamins D and C have been associated with increased NK cell activity through their antioxidant and immune-regulatory properties. While the beneficial effects of nutraceuticals on NK cells are promising, more clinical studies are needed to fully understand their mechanisms and therapeutic potential in immune-related disorders, including cancer and viral infections. This research highlights the growing interest in utilizing nutraceuticals as modulators of NK cell function and their potential role in immune system enhancement.

Biography

Dr. Davide Frumento is an Adjunct Professor and a Postdoctoral Researcher (45 publications, H-index: 9) and was awarded with 2 national scientific prizes. Research history: Biosciences Department, University of Milan, in collaboration with Nephrology Division, Boston. Children's Hospital, Harvard Medical School (Diabetology). Health Sciences Department, University of Genoa (Infectious Diseases drugs compliance studies). Department of Experimental Medicine, University of Genoa (Multiple Sclerosis Epigenetics). Health Sciences Department, University of Genoa (Vaccine Strategy). Adjunct Professor in Epigenetics at the Education Sciences Department, RomaTre University. Adjunct Professor in Organic Chemistry at the Penitentiary Campus, Milan University. Department of Pharmacy, University of Genoa (Chemotherapeutic drugs organic synthesis).

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Saponins profiling of yam (*Dioscorea spp.*) using UHPLC-DAD-MS as related to their nutritional quality

Yam, a member of the Dioscoreaceae family and the *Dioscorea* (D.) genus, is an edible tuber well known to be one of the main sources of steroidal saponins in the plant kingdom. In rodents, consumption of yam or dioscin extracts has been shown to reduce food intake and obesity and to improve the control of diabetes. To cope with the global obesity epidemic, which heavily affects some tropical countries, yam could play an important role in limiting metabolic diseases. The saponin profile was established using freeze-dried yam powder from six cultivars belonging to four different species grown in Guadeloupe (French West Indies): Grande Savane and Jano (*D. rotundata*), Pas possible (*D. esculenta*), Adon (*D. bulbifera*), Caribinra and Goana (*D. alata*). The Jano and Caribinra cultivars are new hybrids which were developed by INRAE (National Research Institute for Agriculture, Food and Environment) for their resistance to fungal diseases. An optimized extraction process and a new saponin analysis method were developed and validated using negative mode ion trap UHPLC-MS. Compounds were identified by comparing them to commercial standards and to the molar masses of steroidal saponins already identified in yams. Total variance in saponin content was mainly explained by cultivar (Chi^2>62.9; p<0.001) and species (Chi^2>52.7; p<0.001). The species *D. rotundata* had the highest concentration of saponins with 843 mg/kg of yam pulp for Jano and 463 mg/kg for grande savane. Pas possible contained 361 mg/kg, Adon 18.6 mg/kg and *D. alata* had the lowest concentrations with 2.8 mg/kg for Goana and 1.6 mg/kg for Caribinra. Cooking in boiling water showed significant differences in saponin content for only two of the cultivars' minority saponins (Chi^2 mean=7.92; p<0.001), indicating that the yam cooking method traditionally used in the West Indies does not destroy saponins.

Keywords: Yams, Cultivars, Saponins, UHPLC-DAD-MS, Dioscin, Optimized Extraction, Health Benefits.

Biography

After studying to become an agricultural engineer, Dr. Dominique Rinaldo earned a PhD in Animal Physiology at Rennes University in France. In 1991, she moved to Guadeloupe and was recruited by INRAe, where she studied heat resistance and meat quality in growing pigs until 2004. Since then, she has been working on the organoleptic, nutritional, and functional qualities of starchy tropical food resources. Initially, she examined the influence of abiotic stress on banana quality for about ten years. Since 2015, her research has focused on the qualities of root crops, primarily yam, with a particular interest in their health benefits and processing potential.

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Whey - From waste to a valuable technological resource based on the Polish market

Whey is a liquid by-product formed in the natural fermentation during the manufacture of cheese, casein, or similar products by separating from the curd after coagulating milk and/or products obtained from milk. Over the last two decades, whey production in Poland has doubled, which creates the need to seek new directions for its management. This work aims to present the use of whey and its products in food technology on the Polish market and new directions for its application. Due to the lack of sustainable practices, whey is considered the most important source of environmental pollution from the dairy industry, as large quantities of whey are disposed of as wastewater, which is associated with severe environmental risks. Failure to valorize this by-product leads to significant economic, nutritional, and environmental losses. On the Polish market, leading dairy producers offer whey as a standalone product, e.g., whey powder, demineralized whey powder (with various mineral content of 1-6.5% and whey protein content of 6-15%), liquid whey, whey permeate powder, demineralized whey permeate powder, traditional whey sour soup ("żur"), whey protein preparations (WPC-Whey Protein Concentrate WPC 30-80% and WPC Instant 50%- 80%; WPI–whey protein isolate, WPH–whey protein hydrolysate, FFWP–Fat Filled Whey Protein with various protein content: 2-24% and vegetable fat: 6-50%). Whey can be a base for fermented and/or fruit whey drinks. Whey-based products are an attractive ingredient in the beverage sector because of their high protein, low fat, BCAA (Branched-Chain Amino Acids), and neutral taste. Moreover, whey proteins are a key ingredient in satiety products. Whey is also used in animal feeding, in meat production, for the production of dietary foods and high-protein supplements, as a source of potentially probiotic lactic acid bacteria (Lactobacillus sp., Bifidobacterium sp.), in biotechnology, for the enrichment of food and pharmaceutical products. Whey is used in the confectionery, bakery, pastry, and dairy industries. All these activities help reduce food waste and protect the environment. New directions for processing whey are still being sought because some of the whey remains unused. The proposals include the development of an innovative carrier of probiotic bacteria and other bioactive compounds in solid and liquid form, e.g., as a meat marinade, which could improve the quality of meat products and at the same time rationally use the by-product or use in other previously unproduced whey drinks. Another solution could be using acid whey as a natural cleaning agent in the food industry. Acid whey is a medium with strong antimicrobial potential; combined with bioactive compounds, it can limit adhesion and destroy microorganisms,

including pathogenic L. monocytogenes. Acid whey and phytochemicals can be used to limit the organization of microorganisms into bacterial biofilms and to degrade the colonized biofilm. Scientists in the SUP-RIM project are working on these solutions.

Research financed by the Ministry of Science and Higher Education of Poland as part of the targeted subsidy "Research network of natural science universities for the development of the Polish dairy sector-research project" (SUP-RIM) (MEiN/2023/DPI/2866).

Biography

Prof. Ewa Czarniecka-Skubina is an employee of the Warsaw University of Life Sciences (WULS-SGGW) and head of the Food Gastronomy and Food Hygiene Department. She achieved the title of full professor, habilitates, and PhD of agricultural sciences in food technology and nutrition. She has published 325 scientific publications, including 53 with Impact Factor. Her main scientific interests include the quality of catering services from the dietary, technological, hygienic, and consumer service aspects; the effect of the technological process on the quality of vegetables and meat; design of new health-promoting products, evaluation of the dietary habits and nutritional status of schoolchildren.

Hema Kesa

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Exploring the importance of indigenous food systems and knowledge in South Africa: Creating accessible, nutritious products for all

Background: South Africa boasts a rich diversity of indigenous food crops with significant potential for fostering health-promoting properties in foods. Rooted in its cultural tapestry, the consumption of these crops has historically played a vital role in addressing nutritional needs and ensuring food security across Africa. However, contemporary trends reveal a decline in the consumption of indigenous foods. This shift is attributed to the nutrition transition and the pervasive commercialization of modernized foods. Amidst high rates of malnutrition and poverty, there arises a critical need to comprehend consumption patterns and knowledge surrounding indigenous foods in South Africa.

Aims: The perceptions and consumption patterns of indigenous foods particularly indigenous crops in Gauteng Province, South Africa by discussing: The consumption of indigenous foods in the population of Gauteng and the availability and accessibility of indigenous foods in Gauteng, South Africa.

Setting and Methodology: A descriptive cross-sectional quantitative design was employed, the study surveyed (n=746) participants in Gauteng province through random sampling. Descriptive analysis was done; mean with standard deviations calculated for continuous variables, and percentages calculated for categorical variables.

Results: Findings indicate a predominance of female respondents (60%) aged 26-35 (52%), predominantly residing in urban areas within the City of Johannesburg. The commonly identified grain crop was sorghum, the vegetable crop was Amadumbe and the fruit crop was Marula. These were particularly favoured among Black respondents. While positive perceptions towards indigenous foods were prevalent, limited accessibility posed a significant barrier to consumption. Seasonal consumption patterns and motivations driven by health and nutrition underscored respondents' willingness to embrace indigenous foods if made locally accessible.

Conclusion/Recommendations: Integration of these crops into the mainstream food system holds promise for enhancing biodiversity, supporting small-scale farmers, and mitigating reliance on resource-intensive agricultural practices. The rise of NCDs linked to obesity will have long term consequences for future growth in South African and globally. Policies must be accompanied with sustainable infrastructure to ensure tangible benefits for the population to achieve the goal of a “long and healthy life for all South

Africans". A multi-sectoral approach with civil society, health professionals, academics and government are needed for thatMoreover, valuing indigenous foods fosters cultural preservation and empowers local communities, contributing to a more sustainable and inclusive food system in South Africa.

Keywords: Indigenous crops, food consumption, food systems, sustainability.

Biography

Hema Kesa holds a Doctorate and Master's in Food Service Management (Specialising in community Nutrition) and a MSC in Food and Nutrition Security. She is the Director of the Food Evolution Research Laboratory (FERL), located within University of Johannesburg. She supervises postgraduate research projects and lectures in Community Nutrition. Her research interests are in food and nutrition security. She is also a council member for the Nutrition Society of South Africa (NSSA). She and the FERL play a key role in encouraging the awareness of good nutrition in communities with the use of Extended Reality (XR) technology and mobile applications.

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Exploring the role and mechanisms of lactiplantibacillus plantarum FRT4 in alleviating obesity and lipid metabolism disorders: Insights from gut microbiota modulation and beyond

Obesity and abnormal lipid metabolism have significant impacts on the health of both humans and animals. Lactic Acid Bacteria (LAB) have shown potential in alleviating obesity and lipid metabolism disorders. Our research has focused on the effects of specific strains, including Lactiplantibacillus plantarum, Lactobacillus casei, Pediococcus acidilactici, and Enterococcus faecalis. In a High-Fat Diet (HFD)-induced obese mouse model, intervention with Lp. plantarum FRT4 alleviated obesity and lipid metabolism disorders by modulating the gut microbiota. Similarly, in a Fatty Liver Hemorrhagic Syndrome (FLHS) model in laying hens induced by a high-energy low-protein diet, Lp. plantarum FRT4 intervention regulated the gut microbiota, alleviated FLHS, enhanced liver function, and improved egg production. Interestingly, heat-inactivated Lp. plantarum FRT4 also modulated the gut microbiota and alleviated HFD-induced obesity and lipid metabolism disorders, with the inactivated strain showing superior effects compared to the live strain. Furthermore, we extracted and characterized the capsular polysaccharide of Lp. plantarum FRT4. Using HFD-induced obese mouse models and fecal microbiota transplantation, we found that the capsular polysaccharide alleviated obesity and lipid metabolism disorders by modulating gut microbiota-mediated amino acid metabolism. Additionally, both live and inactivated Lp. plantarum FRT4 alleviated depression-like behaviors in mice by regulating gut microbiota-mediated tryptophan metabolism. These findings highlight the potential of Lp. plantarum FRT4 and its derivatives in managing obesity, lipid metabolism disorders, and related behavioral issues through gut microbiota modulation.

Biography

Dr. Cai studied microbiology at the Graduate School of the Chinese Academy of Agricultural Sciences (CAAS) and graduated as PhD in 2020. After four year postdoctoral fellowship supervised by Prof. Yang at the Institute of Feed Research of CAAS, she obtained the position of an Associate Professor at the CAAS. Her research focuses on the role and mechanism of lactic acid bacteria in regulating obesity and lipid metabolism, as well as exploring other potential functions. She has published more than 20 research articles in SCI journals, and 6 national invention patents have been authorized.

Ivana Zuber Bogdanovic
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Overview of the presence of campylobacter species on poultry farms in Montenegro

Campylobacteriosis is a disease of the gastrointestinal tract which has been the most frequently reported foodborne zoonosis in the European Union (EU)/European Economic Area (EEA) region since 2005 (EFSA & ECDC, 2022). The causative agent of this disease is Campylobacter, Gran negative battery, ubiquitous in the environment, including in industrial plants and primary production farms.

During the year 2024, tests were conducted to assess the presence of Campylobacter species on poultry farms in Montenegro. Montenegro has implemented the Process Hygiene Criterion (PHC) defined by Regulation (EC) No 2073/2005 (EC, 2005) based on the quantification of Campylobacter on neck skin samples, whereby a limit on the acceptable threshold on the contamination of carcasses (<1,000 CFU/g) is set. Samples were collected once a month from four selected slaughterhouses, from different regions of Montenegro. In slaughterhouses, five random neck skin samples are collected from broilers belonging to the same flock. A total of 130 neck skin samples were tested using the ISO 10272-2:2017 Horizontal method for detection and enumeration of Campylobacter spp - Colony-count technique. Less than 100cfu/g Campylobacter spp. Was recorded in 48% of samples. 15% of samples were contaminated with Campylobacter species in values of 100-1000cfu/g, while 40% of samples had more than 1000cfu/g Campylobacter spp. The majority of isolates were identified as *Campylobacter jejuni spp jejuni* 2, 96% to be exact. The remaining isolates were identified as *Campylobacter coli* (1%) and *Campylobacter spp.* (3%).

This is one of the steps aimed at establishing a more efficient system of measures to monitor and reduce the presence of Campylobacter spp. on poultry farms, since campylobacteriosis is still the most commonly reported zoonosis in Europe.

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Fatty acid profile of butter derived from different locations in Poland

Milk fat is the most complex of all edible fats, containing many Fatty Acids (FAs), from C2 to C28, including even-and odd-numbered, saturated, monounsaturated and polyunsaturated, cis and trans, linear, and branched. Many exhibit biological and physiological properties and are nutritionally valuable for consumer health. Milk fat is a natural and almost exclusive source of certain FAs with potential benefits for human health. For example, milk fat is the primary source of Short-Chain Saturated FAs (SCSFA), which can exert antimicrobial properties. Butyric acid (C4:0) is the primary energy source for intestinal epithelial cells and is essential in maintaining colonic homeostasis. Low butyric acid concentrations can inhibit growth in many human cancer cell lines, mainly the colon. Medium-chain FAs (MCSFA), those from 7 to 12C, similar to SCSFA, are easily digestible and show a low tendency to be stored in adipose tissue. Dietary MCSFA has been related to suppressing fat deposition through enhanced thermogenesis and fat oxidation. Branched-Chain Saturated FAs (BCSFA) possess an essential role in the gut. Milk fat is also a source of vaccenic acid (C18:1 *trans-11*), an essential precursor of the main CLA isomer (C18:2 cis-9 *trans-11*). These FAs would be involved in preventing cancer, obesity, diabetes, and cardiovascular diseases. The composition of bovine milk fat is affected by various factors such as feeding regimen, seasonality, breed of cattle, age, lactation stage, and milking system. Currently, in Poland, two main regimens are used in cow feeding depending on the number of cows in herds. In low-input farms, seasonal feeding is provided. While in farms rearing more than 50 cows in a herd, Total Mixed Ration (TMR) feeding is used. The botanical composition of pasture plants, which differed significantly between lowland and mountainous regions, also has great importance on milk fat composition. Dairy cattle feeding. The study aimed to assess the fatty acid profile of butter samples collected from five different sites in Poland to determine the characteristic compounds that distinguish a given region. Samples were collected from five locations in Poland: Wielkopolska, Lodzkie voivodeship, Podlaskie voivodeship, Mazurian province, and Mountain region Bieszczady. Lipids extracted from butter samples were methylated to obtain methyl esters of FAs (FAMEs) using AOCS Official Method Ce 2-66. Gas chromatographic analyses were performed using an Agilent 6890N instrument equipped with a flame ionization detector and capillary column (Restek Rtx 2330, 10m x 0,25 mm, ID fil thickness 0,1 µm). In total, 47 FAs were identified in butter samples. The contents of many FAs were seasonally dependent. Multivariate statistical analysis revealed significant differentiation in FAs content depending on the origin of butter. Samples from mountainous region (Bieszczady) distinguished among studied five location

by highest content of FAs:CLA-C18:2 cis-9 trans-11, vaccenic C18:1 trans-11 and α-linolenic C18:3 *cis-9 cis-12 cis-15*.

Research financed by the Ministry of Science and Higher Education of Poland as part of the targeted subsidy "Research network of natural science universities for the development of the Polish dairy sector-research project" (SUP-RIM) (MEiN/2023/DPI/2866).

Biography

Jaroslawa Rutkowska, Ph.D., D.Sc., Professor who studied Human Nutrition and Food Technology at the Warsaw University of Life Sciences (WULS-SGGW), Poland, and graduated with an MS in 1995. She received her PhD degree in 2002 and habilitation in 2013. She has been employed at the Faculty of Human Nutrition (WULS-SGGW) since 1993. Her research deals mainly with food chemistry and food quality, predominantly with food lipids. She has published 55 research articles in SCI journals.

Joanna Orzel

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Studies on biofilm growth and total polyphenolic content of fermented beverages

Fruit vinegar and kombucha are two types of fermented drinks known worldwide. They are produced by the selected types of microorganisms from fruits or infusions. Thus, these beverages are recognized as beneficial for our health due to the microorganisms and polyphenols they contain. A sweetening agent is typically used in both beverages, e.g., sucrose, brown sugar or honey. A characteristic phenomenon occurs during the production of both beverages-the formation of living biofilms. In vinegar, this biofilm is known as the "mother of vinegar," while in kombucha, it is called SCOBY (Symbiotic Culture of Bacteria and Yeast). These structures comprise plant-derived cellulose and living microorganisms (yeasts and bacteria), indicating a progressing fermentation process.

The reported studies analysed the influence of several factors on biofilm production and changes in the polyphenolic content of beverages and biofilm itself. Two types of vinegar (apple and raspberry) and two types of kombucha (black and green tea) were produced using sucrose or honey as a sweetening agent. A standard Folin-Ciocalteu method was used to analyse the polyphenolic content of samples.

It was observed that the biofilm growth is independent of the type of used fruits (in the case of vinegar) and tea (in the case of kombucha). The sweetening agent type influences the mother's or SCOBY's growth, respectively. For the total polyphenolic content, opposite conclusions were drawn based on the obtained results. A higher content of polyphenols characterizes vinegar produced with honey. Conversely, adding sucrose increases the polyphenolic concentration in analysed kombucha samples.

Biography

Dr. Orzel studied Chemistry at the University of Silesia, Poland and graduated with an MS in 2010. She then joined the Chemometric Research Group of Prof. Daszykowski at the Institute of Chemistry, University of Silesia. She received her PhD degree in 2015 at the same institution. Since 2023, she has worked as an individual investigator at the Institute of Chemistry. Her studies focus on food quality and safety.

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The potential of *porphyra umbilicalis* from the Atlantic coast of Spain to obtain new proteins via microbial fermentation

Macroalgae (red and brown seaweeds) are feedstocks very rich in carbohydrates (up to 60% content), but generally low in protein content (<20%) and digestibility. However, macroalgae seem a very promising substrate for biomass fermentation to increase protein content. This study aims to evaluate the nutritional composition and antioxidant potential of 5 macroalgae species collected in the Atlantic Coast of Spain to evaluate its fermentation properties to obtain new proteins via microbial fermentation. For this, a comprehensive nutritional analysis was conducted in terms of total content of carbohydrates, protein, and lipids together with the Total Phenolic Content (TPC). In addition, the amino acid, the phenolic and fatty acid profile were determined using LC-MS/MS or GC-FID.

The results indicate that macroalgae species exhibit abundant nutritional components and diverse bioactive compounds, with significant differences in the content of macronutrients and micronutrients. Particularly, *Porphyra umbilicalis (P. umbilicalis)* shows relatively high accumulation levels of both protein and carbohydrates, reaching 31% and 55%, respectively. The fatty acid profile reveals that *P. umbilicalis* contains a high level of Polyunsaturated Fatty Acids (PUFAs) and the highest amount of Eicosapentaenoic Acid (EPA, C20:5n3). The proportion of Non-Essential Amino Acids (NEAA) is relatively elevated. Moreover, the TPC of *P. umbilicalis* was three times higher than that obtained from other macroalgae, demonstrating extremely strong antioxidant properties, which was related to the abundant content of flavonoids (such as tricin, apigenin, amentoflavone) substances. In conclusion, *P. umbilicalis* is rich in protein content and has the potential to serve as a sustainable source of functional compounds, highlighting its value for industrial fermentation applications.

Biography

Zhao studied School of Food Science and Engineering at the Wuhan Polytechnic University, China and graduated as MS in 2024. She then joined the research group of Prof. Jesús on agri-food science and technology at the University of Vigo, Spain Faculty of Science.

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Patent-based evidence synthesis on the use of nanocellulose in pickering emulsions: A quantitative assessment of assignees and geographical distribution

Pickering emulsions, stabilized by solid particles rather than surfactants, have gained considerable attention in recent years, particularly in the food industry, due to their advantages such as sustainability, low toxicity, and high stability. Among natural stabilizers, plant-based nanocellulose has emerged as a promising material, drawing increasing interest from both academic and technological perspectives. This study analyzes patent data related to the use of nanocellulose in Pickering emulsions, with the aim of evaluating technological trends, identifying leading assignees, and mapping global distribution.

Patent analysis serves multiple purposes, such as avoiding the waste of time, labor, and financial resources by preventing reinvention of existing technologies; keeping track of current developments; generating new ideas and improvements based on existing inventions; and identifying potential licensees and licensors. In this context, patent data not only serves as a tool for technology monitoring but also provides a critical evidence source to support decision-making processes.

In this study, a total of 238 patent applications retrieved from the Espacenet and Google Patents databases using the keywords “nanocellulose” and “pickering emulsion” were examined. The applications were classified based on the type of applicant (university, company, individual), country of origin, and number of filings. Approximately 89% of the applications were filed by individuals or small entities with no institutional affiliation disclosed. Furthermore, the analysis revealed that 39 distinct universities have filed patents in this field, indicating that nanocellulose-based Pickering emulsion technologies are still largely in the academic development phase. In terms of geographical distribution, China led with 65 filings, followed by Canada (20), the United States (14), and international applications (23).

This study maps the current state of knowledge on nanocellulose-based Pickering emulsion technologies using patent data as a primary source and provides a robust foundation for evidence-informed decision-making in this emerging field.

Biography

Latife Çağla Çoklar is a Lecturer, RTTP, and certified Patent Attorney at Ondokuz Mayıs University, Turkey. She holds an MSc in Food Engineering and is currently pursuing her PhD in the same field. Her research focuses on bio-based functional materials such as nanocellulose and pectin, as well as green extraction and valorisation of agri-food waste. With over a decade of experience in intellectual property and technology transfer, she supports academia-industry collaborations through IP training and portfolio management. She actively participates in COST Action EU-NESA and contributes to sustainable food systems through evidence-based scientific practices.

Lu Kang

Institute of Agricultural Quality Standards and Testing Technology, Xinjiang Uygur Autonomous Region Academy of Agricultural Sciences, Urumqi, China

Research on health management of cucurbit crops based on selenium regulation

The title of my report is "Research on the healthy management of cucurbit crops based on selenium regulation", and it mainly be presented from the following four aspects. First, the function of selenium and its research progress. Second, the preparation and characterization of nano-selenium, as well as its application effects on powdery mildew of melon and *Botrytis cinerea* of cucumber. Third, the prospects for future research. Fourth, the acknowledgements.

Biography

Kang Lu, born in 1987, is a male associate researcher and master's supervisor with a Ph.D. degree. He currently works at the Institute of Agricultural Quality Standards and Testing Technology, Xinjiang Uygur Autonomous Region Academy of Agricultural Sciences, specializing in agricultural product quality and safety. Dr. Lu has led over 10 projects, including the National Agricultural Product Quality Safety Risk Assessment Project, the "Tianchi Doctoral Program" of the Autonomous Region, and the "Tianshan Talent Program (Phase III)." He has authored or co-authored more than 10 papers as the first or corresponding author.

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Transforming canola by-products: A proteomics-based discovery of bioactive peptides

Global Canola Seed Meal (CSM) production reached approximately 49.2 million metric tons in 2023, underscoring its significance as a protein-rich by-product of oil extraction with increasing potential for valorization in food, feed, and pharmaceutical applications. With Australia alone projected to produce 5.5 million metric tons of canola by 2025—yielding around 696,000 tons of CSM—there is growing interest in exploring this underutilized resource.

This study investigated the impact of two extraction solvents and enzymatic digestion strategies on the number of identified proteins with potential Bioactive Peptides (BAPs) in CSM, aiming to assess its value as a sustainable source of functional biomolecules. A discovery proteomics approach was used, combined with predictive bioinformatics tools. Proteins were extracted using a chaotropic denaturant (urea) or a food-grade mild alkaline solution (alkaline water), followed by digestion with trypsin or chymotrypsin. Mass spectrometry was performed using data-dependent acquisition on a SCIEX 6600 TripleTOF.

Urea-based extraction yielded significantly higher protein and peptide recovery compared to alkaline water. A total of 541 proteins were identified using urea with trypsin, 192 with alkaline water and trypsin, 194 with urea and chymotrypsin, and 90 with alkaline water and chymotrypsin, all at a global 1% FDR. The corresponding numbers of potential BAPs identified from protein-derived fragments were 113 (urea+trypsin), 111 (urea+chymotrypsin), 90 (alkaline+trypsin), and 100 (alkaline+chymotrypsin) based on 80 percent sequence homology to known BAPs bioactive peptides. Potential antibacterial peptides were the most abundant, followed by peptides associated with blood-brain barrier permeability, and antifungal, antiviral, antihypertensive, and anticancer activities.

A significant portion of the identified BAPs—over 75%—originated from defensin-like proteins, small cysteine-rich peptides that are part of the plant's innate immune system. These proteins are well known for their antimicrobial properties, particularly their ability to disrupt microbial membranes, making them a promising source of naturally derived antimicrobial agents.

Further screening with Bioranker predicted 13 non-toxic peptides with 90% confidence, based on sequence features, and structural properties, showing strong potential for anti-inflammatory and anticancer applications.

This study highlights the significant potential of canola seed meal for valorization, demonstrating its use as a rich source of bioactive peptides that could be harnessed for the development of high-value ingredients in food, health, and nutrition applications.

Biography

Dr. Mahya Bahmani holds a Master's degree in Agricultural Biotechnology from the University of Tehran, where she specialized in pulse crop transcriptomics. In 2019, she was awarded an Australian Government Research Training Scholarship and completed her PhD at Edith Cowan University in 2023, focusing on proteomics to investigate malting quality in barley and gluten protein changes during food processing. Currently, she is a Postdoctoral Research Fellow at CSIRO, applying mass spectrometry-based proteomics and peptidomics to identify and characterize bioactive peptides from food and agricultural waste. Her research aims to transform underutilized agricultural by-products into high-value functional ingredients, contributing to the development of sustainable food systems.

Atchiman Esther Blandine Kraidy[1], Coulibaly Gnellé Assita[1], Audrey Herbert Yépié[1], Mahamat Hissein Ali[2*], Anin Louise Anin Atchibri[1]

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Characterization of dietary typologies among adults in the Grands-Ponts region of Côte d'Ivoire

The analysis of dietary typologies is a key tool for describing population eating behaviors and identifying their determinants. In the Grands-Ponts region, in southern Côte d'Ivoire, a cross- sectional study was conducted among 1,077 adults, and Multiple Correspondence Analysis (MCA) was used to characterize the population's dietary profiles. The results revealed five distinct profiles: traditional, precarious, practical, hedonic, and constrained.

The traditional profile, the most widespread, is based on local eating habits with regular consumption of cereals, starchy foods, vegetables, and animal proteins. The precarious and practical profiles reflect constrained situations. The precarious profile is associated with economic limitations and food insecurity, while the practical profile reflects the impact of urbanization and time constraints, favoring simplified and sometimes unbalanced dietary choices. The hedonic profile illustrates a nutritional transition linked to increased purchasing power and access to a more varied diet, including processed and sugary foods. This profile reflects a pursuit of dietary pleasure but also carries risks related to excessive consumption of energy-dense products. Finally, the constrained profile corresponds to highly limited food choices due to economic, social, and environmental pressures, reflecting forced adaptation to living conditions.

The distribution of these profiles varies across the studied departments, highlighting the combined influence of sociodemographic, economic, cultural, and environmental factors on dietary practices. This typology underscores the considerable heterogeneity of eating behaviors in the Grands-Ponts region and provides a critical basis for guiding nutritional interventions and chronic disease prevention strategies.

Keywords: Dietary Typologies, Dietary Profiles, Grands-Ponts, Côte d'Ivoire, Determinants.

Biography

Dr. Mahamat Hissein Ali studied general medicine at the University of N'djamena, Chad, and obtained a Doctor of Medicine degree in 2009. He then began specialized medical studies in Nephrology at the Ibn Rochd University Hospital Center in Casablanca, Morocco. In 2015, after four years of study, Hassan 2 University of Casablanca, Morocco awarded him a Medical Specialty Diploma in Nephrology. Upon his return to Chad in 2016, he began a hospital-university career, particularly at the Renaissance University Hospital Center, where he has since practiced as a Nephrologist, and at Adam Barka University (Chad) where he obtained the position of Assistant Chief of Clinic at the Faculty of Medicine of said University and has been in charge of Nephrology courses since 2019. He has published more than 20 research articles in scientific journals.

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Development, optimization, and characterization of vitamin C-fortified oleogel-based chewable gels and a novel nondestructive analysis method for the vitamin C assay

Chewable gels represent an excellent alternative to oral dosage forms, such as tablets and capsules, owing to their appealing appearance, easy swallowing, and attractive colors. Given the inherent instability of vitamin C, particularly within chewable gels, it is imperative to enhance its stability and mitigate its degradation during processing and storage. Oleogel, systems prepared through an environmentally friendly and pollution-free method, exhibit a three dimensional network structure that eliminates oxygen, alleviates oxidation, and enhances vitamin C stability. This study focused on optimizing vitamin C-fortified oleogel-based chewable gels using Plackett–Burman and D-Optimal design methodologies to maximize vitamin C stability while maintaining favorable mechanical properties. The optimal formulation, Opt-C, was achieved by crystallizing the gel at -18°C, incorporating 2.5g of Distilled Monoglyceride (DMG), and maintaining an oleogel-to-chewable gel ratio of 10%. Opt-C was comprehensively characterized using Differential Scanning Calorimetry (DSC) and Fourier Transform Infrared Spectroscopy (FT-IR), and its stability was rigorously assessed. Furthermore, a nondestructive assay method for vitamin C determination in chewable gels was developed employing Near-Infrared Spectroscopy (NIR) and chemometric techniques. Storage studies demonstrated that Opt-C retained 85% of its vitamin C content during accelerated tests over ten weeks, surpassing the 69% retention observed in the control chewable gel. Opt-C exhibited a slower release of vitamin C in simulated digestive fluids; however, this release profile did not adversely impact the overall availability of vitamin C. Ultimately, the developed multivariate model successfully predicts vitamin C concentration: Root Mean Square Error of Calibration (RMSEC): 0.284, R2cal: 0.9906; RMSE Cross-Validation (RMSECV): 0.501, R2val: 0.9722; RMSE prediction (RMSEP): 0.670, R2pred: 0.9154. This innovative approach enhances the stability of water-soluble vitamins in chewable gels.

Biography

Mannan Hajimahmoodi received Pharmacy Doctorate and PhD of food science and nutrition from Tehran University of Medical Sciences (TUMS). She was manager of Food and Drug Administration, TUMS since 2013 till 2022. Now she is professor of nutraceuticals in Drug and food control department, faculty of pharmacy, TUMS. She has published more than 100 papers and managed more than 50 projects about food and nutrition. She is skillful in analytical instruments such as HPLC, GC/MS, GC/FID, IR, UV, and NMR and highly interested in nutraceuticals and analytical methods about food safety and quality.

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Functional foods alleviate behavioral alterations and improve GABAergic system regulating TLR-4/Nf-kb axis in valproic induced autism

Valproic Acid (VPA) postnatal exposure in mice results in behavioral impairment, aberrant sensitivity to sensory stimuli, and self-harming behavior, hallmarks of autism. According to previous reports, Coriolus Versicolor (CV) has a protective effect on the brain. The goal of the current investigation was to assess how CV affected the neurobehavioral and metabolic changes caused by VPA in mice. Mice pups were injected with VPA at 14 days of age and orally administered CV at a dose of 200 mg/kg daily from 14 to 40 days of age. Mice pups were placed through behavioral tests during the trial to evaluate motor skill growth, nociceptive response, locomotion, anxiety, and cognition. Following behavioral testing, mice were killed, and the brain was removed and subjected to biochemical analyses (glutathione, malondialdehyde, and nitric oxide) and histopathological analysis. Additionally, to further investigate the role of the TLR-4/MYD88/NF-κB signaling pathway, we examined the modulation of this pathway and the alteration in Gamma-Amino Butyric Acid (GABA) production using western blot analysis. According to our research, CV daily administration greatly reduced behavioral alteration, reversed the disorganization of the cerebellum and hippocampus, and significantly improved the VPA-induced neuroinflammation via the TLR-4/MYD88/nf-kb signaling cascade.

Biography

Dr. Marika Cordaro graduated in Biology at the University of Messina in 2015. She has completed PhD in “Applied Biology and Experimental Medicine” at University of Messina, Italy in the year 2017. She is a young researcher in physiology, with particular interest in cell physiology and molecular mechanism underling inflammation. Dr Cordaro, during her research activity, produced about 190 articles that attest a diffuse interest in the field of nutrition and aging disorder-related. She also interests endocrine disruptors and in its role in neurological deficits. Her research is involved in preclinical studies for the discovery of physiological cellular response that could be used as new potential therapeutic targets.

Milana Matić[1*], Alena Stupar[1], Marko Kebert[2], Biljana Kiprovski[3], Milka Brdar-Jokanović[3]

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Sequential dual-phase NADES extraction of bioactive compounds from pumpkin

Natural Deep Eutectic Solvents (NADES) have been recognized as sustainable, biodegradable, and non-toxic alternatives to conventional organic solvents in the extraction of bioactive compounds from plant materials. Their adjustable polarity makes them suitable for extracting compounds with diverse chemical characteristics. In this study, a sequential NADES-based extraction method was applied to evaluate the carotenoid and polyphenol content in three different *Cucurbita moschata* varieties, aiming to assess both extraction efficiency and compound specificity.

The extraction protocol was designed to selectively isolate hydrophobic and hydrophilic bioactives from a single plant matrix. In the first step, a hydrophobic NADES composed of octanoic acid and decanoic acid (3:1, molar ratio) was used to extract carotenoids, targeting their non-polar, fat-soluble nature. Previously optimized ultrasound-assisted extraction parameters included a temperature of 50°C, ultrasonic power of 60% (52.5 W/cm^3), a solvent-to-solid ratio of 7 mL/g, and an extraction time of 1 hour (10 minutes for carotenoids, 50 minutes for polyphenols). Carotenoids were subsequently isolated from the hydrophobic extract to obtain purified compounds suitable for quantification. The remaining biomass was subjected to a second extraction step using a hydrophilic NADES (glycerol:urea 1:1) to recover polar compounds, specifically polyphenols. This two-step sequential method enhances total yield while minimizing waste by reusing the same plant material.

Comparative analysis among the three *Cucurbita moschata* varieties revealed considerable differences in carotenoid content, with one variety exhibiting the highest concentration of 548.12 µg β-car/g compared to 73.02 and 84.92 µg β-car/g in the other two. A similar trend was observed for polyphenol content, although inter-varietal differences were less pronounced. The same high-carotenoid variety also showed the highest polyphenol concentration, 8.97 µg GAE/ml, followed by 5.78 and 4.36 µg GAE/ml in the remaining varieties. These findings highlight the importance of variety selection in developing functional foods and nutraceutical formulations.

In conclusion, the sequential use of hydrophobic and hydrophilic NADES represents a highly efficient, eco-friendly, and selective strategy for isolating diverse bioactives from pumpkins. Beyond maximizing extraction yields, this method preserves compound bioactivity and aligns

with principles of green chemistry. It offers a promising platform for the sustainable valorization of agricultural by-products and the creation of high-value functional ingredients.

Acknowledgements: This research was supported by the Science Fund of the Republic of Serbia, #6680, Nutrition-sensitive breeding of Cucurbita plants - NutSens_PumpBreed.

Biography

Milana Matić studied Biotechnology at the University of Novi Sad, Serbia, where she earned an MSc in Technology in 2017. She began her research career in 2018 at the Institute of Food Technology, Novi Sad, Serbia. She participated in many national projects and a bilateral project with France, within which she completed a two-month research stay at INRAE/INSERM in Marseille, in her area of expertise. Her research focuses on bioactive compounds, green extraction techniques, and functional food development. Besides, she has authored 26 scientific papers and presentations.

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Response of maize (*Zea mays L.*) genotypes to aluminium toxicity in the Eastern Cape of South Africa

Breeding maize for tolerance to acidic soils could improve maize yields. The current study aimed to identify maize genotypes with tolerance to highly acidic soils as well as finding secondary traits associated with tolerance to soil acidity at the seedling stage. Ten maize varieties were screened for tolerance to soil acidity under glasshouse conditions as well as in the laboratory. In the glasshouse, two soil acidity levels (limed and unlimed soil) were used and the experiment was set up in a Randomized Complete Block Design (RCBD) with three replications. The experiment lasted for 10 days and measurements were taken on Plant Height (PH), leaf area, stem diameter and dry matter. In the laboratory, a Haematoxylin Staining (HS) experiment was conducted to determine the response of the 10 maize varieties to Aluminium (Al) toxicity. Two Al concentrations (0 and 222 µM) were used and the experiment was set up in a CRD with three replications. After 7 days, shoot length, was recorded. Five stress tolerance indices were estimated to determine the resilience of each genotype. A root growth stress tolerance index was also computed in both experimental procedures. The glasshouse and laboratory assays identified similar tolerant genotypes of maize.

Keywords: Maize, Seedling, Tolerance, Al Toxicity, Selection.

Biography

Mr. Mkafula T.P joined the Department of Agriculture and Rural Development in 2007 as Agricultural Advisor. He is working very closely with rural farmers and assisting them with scientific advice to grow from emerging farmers to commercial level.

Narendra VG

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Harnessing artificial intelligence for innovation in food science and technology

The integration of Artificial Intelligence (AI) in food science and technology is reshaping the way we produce, process, and consume food. From smart agriculture to precision food processing, AI offers powerful tools to enhance efficiency, safety, and sustainability across the food value chain. Through advanced data analytics, machine learning, and predictive modelling, AI enables real-time decision-making and optimized operations, which are critical in today's fast-evolving food industry.

In agriculture, AI-driven systems are used for crop monitoring, yield prediction, soil analysis, and pest detection, helping farmers make informed choices to maximize productivity while minimizing environmental impact. In food processing and manufacturing, AI facilitates automation, quality control, and traceability, ensuring consistent product standards and reducing waste. Additionally, AI technologies are being employed to personalize nutrition, develop novel food products, and predict consumer preferences by analysing vast datasets from various sources, including social media and wearable devices.

Moreover, AI plays a pivotal role in ensuring food safety by detecting contaminants, monitoring supply chain integrity, and predicting potential outbreaks. The fusion of AI with other emerging technologies like the Internet of Things (IoT), robotics, and blockchain further amplifies its potential, offering a comprehensive ecosystem for innovation.

This interdisciplinary convergence of AI and food science opens up new research and development avenues, paving the way for a resilient and future-ready food system. As we move forward, harnessing the full potential of AI will be key to addressing global challenges related to food security, nutrition, and sustainability.

Biography

Dr. Narendra V G is a Professor in the Department of Computer Science & Engineering at Manipal Institute of Technology, MAHE, India. He holds a B.E. from Karnataka University, M.Tech. from VTU, and Ph.D. from MAHE. With 25 years of academic and 10 years of research experience, his work focuses on food quality evaluation using image processing and soft computing. He has published over 60 papers and presented internationally. His research includes smart farming, Blockchain, and IoT in agriculture. He is currently the Principal Investigator of the MeitY-funded project 'Indian Language to Indian Language Machine Translation'.

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Tracking the microbiota of five vegetables from farm to retail distribution in Dakar using 16S rRNA sequencing

Foodborne illnesses are generally caused by the lack of hygiene in consumed food. In Senegal, particularly in Dakar, mixed salads are served daily in restaurants and have been identified as a source of numerous food poisoning cases. Therefore, in this study, we focused on monitoring the microbiota of five commonly raw-consumed salad vegetables (celery, cabbage, lettuce, bell pepper, and tomato), from the fields where they are cultivated to the markets and supermarkets where they are distributed. We aimed to assess the impact of the distribution areas whether suburban or urban on the microbiota of these vegetables.

Samples were collected at multiple stages along the distribution chain in both urban and peri-urban environments. Microbial characterization was conducted using 16S rRNA gene sequencing, with bioinformatic analysis performed using Kraken2, a high-performance taxonomic classifier based on NCBI databases.

Three key microbial parameters were assessed:

1. Alpha diversity (richness, Shannon, Simpson, Pielou indices),
2. Beta diversity (NMDS ordination),
3. Relative abundance of dominant bacterial genera.

Vegetables collected directly from farms exhibited the highest bacterial richness, reflecting environmental exposure, yet displayed low community balance, with dominance by genera such as *Glutamicibacter* (~34 %), *Xanthomonas* (~34 %), *Pseudomonas* (~34 %) and *Sodalis.* Suburban market vegetables showed intermediate richness but better taxonomic balance, often dominated by *Acinetobacter* (~80 %), or *Weissella*. (~20 %) and the same goes for Urban market *Weissella* (~60 %), *Sodalis* (~20 %).

Suburban Supermarket samples exhibited the lowest diversity *Exiguobacterium* (~40 %), others genres (~20 %), and in Urban Supermarket *Xanthomonas* (~65 %), *Acinetobacter* (~35 %) likely due to post-harvest processing (e.g., washing, refrigeration), and showed more homogeneous microbial communities.

Beta diversity analysis revealed distinct clustering by environment type: field samples were highly variable, while market and supermarket samples were more similar, suggesting standardized post-harvest handling or shared sources of contamination.

This study highlights the significant impact of the distribution environment on the microbiota of raw vegetables in Dakar and underscores the need to improve post-harvest practices to ensure food safety and microbial quality in urban food systems.

Keywords: Vegetables, Microbiota, 16S Metagenomics, Food Hygiene, Distribution Chain

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1-Methylcyclopropene (1-MCP) effects in post-harvest storage and quality preservation of Abate Fétel pears

Appreciated by consumers for their aroma, texture and balanced sweet, Abate Fètel pears is the most important cultivar in North of Italy, especially in Emilia Romagna region and the strategies to increase shelf- life and maintain fruit quality are priority to the food industries.

The use of 1-Methylcyclopropene (1-MCP), reducing the effects of ethylene, which is the main responsible for fruit ripening, is one of the most interesting techniques actually used.

The aim of our work was: i) to evaluate the influence of 1-MCP on post-harvest fruit quality and shelf-life of Abate Fetel' pears, in samples treated with 1-MCP for 24 h, and than stored at 1-2°C in a climatic cell for different period (from September to March); ii) to evaluate the influence of 1-MCP on post-harvest fruit quality and shelf-life of Abate Fetel' pears comparing with samples stored only in climatic cell.

The assessed parameters were glucose and fructose, pH, acidity and organic acids (malic, citric, fumaric and shikimic), ash, protein, firmness for fruit pulp; phenolic content and phenolic compounds (chlorogenic and caffeic acids, rutin, hyperoside, kaempferol-3-rutinoside and isoquercitrin) and antioxidant activity in fruit peels.

It was observed that 1-MCP was efficient in maintaining fruit quality till the six months of storage (from September to March) and we also observed that the fruits treated with 1-MCP better preserved the phytochemical compounds compared to simple refrigeration, preserving the fruit's quality and prolonging its shelf-life.

Biography

Paola Tedeschi studied Biology at Ferrara University (Italy) and graduated at 1998. She received her PhD degree in Food Safety in 2006 at Perugia University. After some years of postdoctoral fellowship, she obtained the position of Researcher in 2020 and Associated professor in 2024 in Food Science and Technology at University of Ferrara. She has published more than 50 research articles.

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Nutritional potential and fermentation properties of edible *Heinsia crinite*, *Piper guineense* and *Xylopia aethiopica* from Angola

The medicinal and edible plants from Angola, Heinsia crinita (*H. critina*), *Piper guineense* (*P. guineense*) and *Xylopia aethiopica* (*X. aethiopica*) generally sold at the local African market to treat malaria or for women´s health. Few information is known about the composition that causes the activities to combat these illness. For this reason, the objective of the present work was to obtain a comprehensive nutritional characterization of *H. critina* root, *P. guineense seed* and *X. aethiopica* pod. Results showed the nutrient and elemental composition of these plants varies significantly, with the *H. critina* root containing abundant carbohydrates (32.74%), while the *P. guineense seed* and *X. aethiopica pod* are rich in proteins (12.52%) and lipids (29.99%), respectively. The highest concentrations of Essential Amino Acids (EAAs) were leucine, with the limiting types being methionine, cysteine and valine, among that H. crinita root had the highest EAAs (39.45%). As for their fatty acids, oleic acid (C18:1n9) and linoleic acid (C18:2n6) were the major Monounsaturated and Polyunsaturated Fatty Acids (MUFAs, PUFAs), respectively, while C24:1n9 was found only in the *P. guineense seed*. All plants are particularly rich in Potassium (K), while Zinc (Zn) and Iron (Fe) are the main microminerals. In addition, UPLC-ESI-TSQ-MS/MS was used to identify and quantify phenolic profile of these plants. There were some major flavonoids, such as luteolin, kaempferol, isorhamnetin, apigenin and quercitrin, but most of them were in the form of glycosides. Three types of chemometrics methodologies: Hierarchical Cluster Analysis (HCA), Principal Components Analysis (PCA), and Orthogonal Partial Least Squares-Discriminant Analysis (OPLC-DA) were used to differentially analyze phenolic compounds in these plants, with an attempt to discover and excavate structurally novel and biologically active phenolics from them. As for antioxidant capability, the *X. aethiopica pod* showed the best level in 2,2-Diphenyl-1-Picrylhydrazyl (DPPH), Ferric Reducing (FRAP) and Trolox Equivalent (TEAC). Correlation coefficient analysis demonstrated that phenolic acid type showed significant positive correlation with DPPH and FRAP, while quercetin and luteolin flavonoids showed significant positive correlation with TEAC. Based on the fact that biotransformation is a viable strategy to enhance bioactivity, their fermentation characteristics and bioactivity were evaluated by solid state fermentation technology of *Aspergillus niger*. This strategy increased their free phenolic content as well as antioxidant activity. To conclude, the data obtained will help optimize the use of these resources and promote their broader application in food flavors, pharmaceuticals, cosmetics, and other related fields, enhancing their commercialization potential.

Biography

Pengren Zou is a second--year international Ph.D student of University of Vigo supported by CSC Scholarship. He graduated from Hefei University of Technology with a master's degree, and graduated from Qinghai University with a bachelor's degree. Research direction: extraction, identification, bioactivity and high value utilization of plant polyphenols. Until now, He has published 9 Q1 academic papers, including 4 first-authored papers, such as 3 Food Chemistry and 1 Food Bioscience. He has been awarded the national scholarship for master's degree, the excellent graduate of Anhui Province, and the excellent graduate of Qinghai University.

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Potential of yeast *Candida* spp. and *Pichia* spp. to adhere to stainless steel surfaces under various growth conditions and their control

Yeast adhesion followed by biofilm formation on the surface of materials commonly used in food processing, such as stainless steel, has attracted much attention because these surfaces can become a potential source of contamination that may seriously affect food safety and quality, leading to significant financial losses. With this in mind, the present study aimed to assess the ability of *Candida spp. and Pichia spp.* To adhere to stainless steel discs (SS, AISI 304) with different degrees of surface roughness (Ra=25.20–961.9 nm) under various growth conditions like medium (Malt Extract Broth (MEB) or Yeast Peptone Dextrose (YPD) broth) and temperatures (7°C, 37°C, 43°C for Candida strains and 7°C, 27°C, 32°C for Pichia strains). In this study, we also determined the antifungal and antiadhesion activity of plant extracts such as *Humulus lupulus*, *Alpinia katsumadai* and *Evodia rutaecarpa* against *C. albicans*, *C. glabrata* and *P. membranifaciens* and evaluated whether these plant extracts can interfere with biofilm formation. The adhesion was assessed by the crystal violet staining method, while the broth microdilution method CLSI M27-A3 was used to determine the minimum inhibitory concentration (MIC) of plant extracts. Our results indicated that the growth medium which resulted in a higher adhesion of *C. albicans* and *C. glabrata* was MEB, while for *C. parapsilosis* and *C. krusei* it was YPD. In the case of *P. pijperi* and *P. membranifaciens*, YPD broth was more effective in promoting adhesion than MEB. Regarding the effect of temperature, most Candida strains adhered to stainless steel surfaces in significantly higher level at 37°C, while the adherence ability of Pichia strains were highest at 27°C. Based on MIC values, all plant extracts were effective in inhibiting yeast growth, with the obtained MIC values ranged from 100 to 400 µg/mL. It was observed that biofilm of *C. glabrata* was more resistance to plant extracts as compared to *C. albicans*. However, extracts of *A. katsumadai* and *E. rutaecarpa* promoted the growth and development of the preformed biofilm of *P. membranifaciens.* Therefore, this study provides valuable information for a better understanding of the adhesion behavior of Candida and Pichia on stainless steel surfaces, and knowledge of how factors influence this phenomenon is of great importance in order to avoid their colonization on food contact surfaces.

Biography

Ružica Tomičić has completed her PhD at the Department of Biotechnology, Faculty of Technology, University of Novi Sad, Serbia, in 2018. She is currently employed at the same faculty as a Senior Research Associate and works in the Laboratory of Microbiology. During her doctoral studies, she had the opportunity to be involved in a research project of Prof. Dr. Peter Raspor at the Biotechnical Faculty in Ljubljana, Slovenia, where she gained experience in working with pathogenic and spoilage microorganisms. She participated and participates in numerous national and international projects (COST), published more than 50 scientific and technical papers, and serves as a respected member of editorial boards.

Shao Hong-Bo

Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences (CAS) and Academia Journal of Microbiology Research, China

The role of food and science technology in diet regulations as it affects public health and genetically modified products

This paper explores the role of food science and technology in shaping diet regulations and its implications for public health, with concentration on Genetically Modified (GM) products. The introduction of genetically modified foods has sparked debates regarding their impact on human health, biodiversity and ethical concerns. This study examines how food technologies contribute to regulatory frameworks aimed at ensuring food safety and public health, while addressing the controversies surrounding GM products. It discusses how diet regulations, influenced by scientific research, can mitigate the risks associated with poor dietary habits and emerging food borne diseases. This paper highlights the importance of balanced regulatory policies that integrate scientific evidence to promote health, safety, and consumer confidence in food systems. Food science and technology play important role in shaping modern diets, influencing public health through the development of healthier food and the regulation of food safety. With the rise of Genetic Modification (GM) in agriculture, these advancements have sparked significant debate surrounding their benefits and potential risks. The integration of GM products into food systems has raised concerns regarding long-term health implications. GM foods have the potential to address issues of food insecurity, improve nutritional content, and reduce the dependency on pesticides. Food technology, including processing methods and preservation techniques, has contributed to more accessible, longer-lasting, and nutrient-enriched foods. These innovations are essential for promoting public health by making nutrient-dense foods more readily available and cost- effective, particularly in areas with limited access to fresh produce. Additionally, food regulations are crucial in controlling the production, labeling, and distribution of GM foods, ensuring that consumers are informed and can make choies aligned with their health goals and ethical preferences. This paper explores the complex interplay between food science and technology, focusing on the regulation of GM foods, and their role in shaping public health outcomes.

Biography

Prof. Dr. Shao Hong-Bo is a distinguished scientist affiliated with the Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences (CAS), China. His research primarily focuses on coastal zone ecology, environmental science, and the sustainable development of marine resources. With extensive expertise in the interactions between coastal ecosystems and human activities, Prof. Shao has contributed significantly to advancing knowledge in areas such as coastal management, marine biodiversity, and climate change impacts on coastal environments. His work has led to numerous publications in top scientific journals amongst which is Academia Journal of Microbiological Research; where he is Editor-In-Chief and has been actively involved in various national and international research collaborations. As a leading expert, Prof. Shao's contributions have helped shape the direction of coastal zone research in China and globally, with an emphasis on fostering environmental conservation and sustainable practices in coastal regions.

Shima Asgarzadeh

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Effect of oleaster (*Elaeagnus angustifolia*) flour on the properties of gluten-free buckwheat pasta: Enhancing functional, nutritional, and quality attributes

The increasing demand for gluten-free products has led to the development of alternative formulations, especially for widely consumed foods like pasta. This study focuses on producing gluten-free pasta using different combinations of buckwheat flour and 20% flour from various parts of pleaser fruit (Elaeagnus angustifolia), including shell, seed, and pulp. The research examines the chemical, nutritional, and quality properties of the resulting pasta. The moisture content of oleaster-derived flours was higher than that of wheat and buckwheat flours, with oleaster pulp containing the highest ash content (2.36%). Protein content varied between 8.14% and 13.07%, with the highest value found in seed flour. pH values of gluten-free pasta doughs containing oleaster flours were lower than those of control wheat and buckwheat pasta doughs. The moisture content of gluten-free pastas with different oleaster flours showed no statistically significant difference ($p>0.05$). Among the pastas, CKM pasta (containing seed flour) had the highest protein content (18.36%), whereas control buckwheat pasta (KM) and KKM pasta (containing 20% shell flour) had the lowest. The highest fat content (5.40%) was found in PKM pasta, which contained 20% oleaster pulp flour.

Cooking properties varied among samples. The control wheat pasta exhibited the highest weight and volume increase (186.34% and 276.60%, respectively), whereas among oleaster-containing pastas, PKM pasta (containing pulp flour) showed the highest values (172.17% and 245%, respectively). Water absorption was highest in KKM pasta (containing shell flour) at 11.14%. Cooking time was shortest in wheat pasta and PKM pasta (both at 11 minutes).

Textural analysis revealed that KKM pasta, containing shell flour, exhibited the highest hardness and brittleness. Pasta thickness ranged from 1.17 mm to 2.24 mm, with the thickest being PKCM pasta, which contained a combination of core-shell and pulp flour. In terms of bioactive properties, total phenolic content, antioxidant capacity, and flavonoid content varied significantly depending on the oleaster flour used ($p<0.05$). The highest total phenolic content was found in KCKM pasta (56.61 mg/100g), which contained equal amounts of shell and kernel flour. The highest antioxidant activity (81.89%) and flavonoid content (11.01 mg/g) were observed in PKM and KKM pasta, respectively. Color measurements showed differences based on the

type of oleaster flour used. The highest L* value (66.35) was found in KKM and PKM gluten-free pasta, the highest a* value (6.00) in CKM pasta, and the highest b* value (29.72) in wheat pasta. Overall, oleaster pulp and seed flours demonstrated higher nutritional quality than other parts, with oleaster pulp exhibiting technological properties comparable to wheat pasta. The study highlights the potential of using oleaster fruit parts, typically consumed as dried fruit, as valuable ingredients in gluten-free pasta production.

Biography

Shima Asgarzadeh studied Food Technology at the Urmia Payam Nour University, Agriculture Faculty, Urmia, Iran and graduated with a BS in 2017. Then, she studied Food Engineering at the Istanbul Aydin University of Food engineering, Faculty of Engineering, Istanbul, Turkey and received her MS degree in 2024. Shima has paricipated in International Grain and Pulses Congress (IGPC), İstanbul-Türkiye (2024).

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Nutrient uptake and mineral composition response of amaranthus species grown on acidic soil to animal manure amendments and micorrhizae enhancement in Eastern Cape Province, South Africa

Although Amaranthus is among the most popularly grown and consumed nutritious indigenous leafy vegetable in Africa, it is rarely cultivated in the Eastern Cape Province of South Africa but gathered from the wild. Farmers in the Eastern Cape are involved in production of exotic vegetables but are mostly challenged by soil acidity. Lime is usually required to ameliorate acidic soils but most of these smallholder farmers do not afford it and other mineral fertilizers because these are unaffordable to them given their limited financial resource status. As a result, they apply animal manures to address challenges pertaining to soil fertility. When applied to acidic soils, animal manures have been observed to have an ameliorative effect that can make soil nutrients such as phosphorus, a nutrient which is mostly unavailable in acidic soils, to be more available to plants. Another affordable alternative towards making phosphorus more available to plants in acidic soils is inoculation of plants with Arbuscular Mychorrhizal Fungi (AMF). A study was therefore conducted to evaluate the effectiveness of augmenting acidic soil with different animal manures namely: cattle, sheep, poultry, goat and mineral fertilizers i.e. NPK and lime as well as inoculating with AMF, used singly or in combinations, on nutrient uptake and mineral composition of two Amaranthus species namely: *A. hybridus* and *A. Cruentus*. Fertilization of plants with animal manures singly or in combinations with NPK fertilizer and inoculation with AMF improved both nutrient uptake and mineral composition of Amaranthus species to be comparable with those fertilized with recommended NPK (mineral) fertilizer and lime. These plants performed better than the unfertilized and those inoculated with AMF only.

Biography

Simphiwe Mhlontlo holds a BSc (Agric.) degree majoring in Crops and Horticultural Sciences followed by an MSc (Agric.) degree in Crop Science from the University of Fort Hare, Alice. He is currently working as a Scientific Manager for Agronomy Research in the Department of Rural Development and Agrarian Reform in the Eastern Cape Province of South Africa. Mr Mhlontlo is pursuing a PhD degree in Crop Science from the University of KwaZulu Natal (UKZN) He is registered with the South African Council for for Natural Scientific Professions (SACNASP) as a Professional Scientist. He has authored and co-authored four scientific papers.

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Development of golden chlorella – Starch ink for 3D printed dysphagia diets

Golden Chlorella (GC) with various nutrients have high potential for 3D food printing applications in the diet of patient with dysphagia. Rheological, textural, printability, and other characteristics of starch ink with starch types were estimated. Corn Starch (CS) and Potato Starch (PS) ink indicated superior printing quality, self-supporting ability, and refinedness of shape. Waxy Corn Starch (WCS) ink had a liquid-like state with viscosity and G′<G″ value. Fourier transform infrared and X-ray diffraction suggested the formation of hydrogen bonds between starch and GC during gelatinization and stable formation as crystallinity decreased. Rheological properties demonstrated that as the concentration of starch increased, higher mechanical forces were required during extrusion. Textural analysis revealed that 10% CS, 20% CS, 20% PS, and 30% PS inks were suitable for dysphagia diet, with good printability and circularity. This study confirmed that CS and PS are suitable for developing GC into food ink for dysphagia diet.

Biography

Dr. Song Yi Koo studied Life Science at Korea University and graduated with a BS degree in 2004. She then obtained her MS degree in Food Engineering in 2006 from Korea University. She joined the Natural Product Systems Biology Center at KIST Gangneung Institute of Natural Products in 2007, where she has been working for 18 years. She received her PhD degree in Nutrition from Seoul National University in 2021. She currently holds the position of Senior Researcher at KIST Gangneung Institute. Her research focuses primarily on Food Technology and Engineering, contributing to advancements in natural product applications.

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Comprehensive evaluation of meat quality in traditionally raised pigs: Nutritional, biochemical, and histological perspectives compared to industrial systems

This study aimed to evaluate the compositional quality of pork and traditional pork products from pigs raised under extensive conditions. It compared these to industrially raised breeds using a multidisciplinary approach—, nutritional, biochemical, and histological. The key objectives included analyzing carcass traits, nutrient composition, and typicity factors of pork meat but also the quality aspects of pork meat products obtained by traditional processing. The experiment involved 30 traditionally raised Mangalitsa and Bazna pigs from various commercial breeds raised under identical conditions, and five various pork meat products processed from the meat analysed. The study highlighted the distinctive qualities of pork from the these traditionally raised breeds, which include: Slower growth and fattening period but a higher slaughter yield compared to specialized and industrially raised breeds; Water and protein content are inversely proportional to fat levels, with the highest values observed in the ham region. Cholesterol levels in these pork meat are not statistically significantly different ($p>0.05$) from other breeds but tend to be lower (50–90 mg/100g); Meat from the neck has nearly triple the caloric value compared to the ham, with values ranging from 120.24 kcal to significantly higher. Traditional rearing results in 13.2% lower saturated fats and 8.4% higher unsaturated fats, notably monounsaturated fatty acids beneficial to health. Traditional pork products have higher protein content (statistically significant, $p<0.05$), and improved nutritional profiles compared to industrially produced equivalents. Traditional products retain better tissue morphology with dense, rectangular myocytes and fine sarcoplasmic granularity, while industrial products show cellular hyperhydration and increased fibrous and interstitial tissue. The traditional pork products analyzed contained no added nitrites, with levels undetectable by spectrophotometric analysis. The sodium chloride content in traditional products was also significantly different ($p<0.05$) compared to industrial products; levels were higher in pork ham and tenderloin but remained within accepted limits. Traditional products contained a notable amount of smoked Polycyclic Aromatic Hydrocarbons (PAHs), with some types (e.g., smoked tenderloin) reaching up to 100 µg/kg. However, benzo[a]pyrene, the carcinogenic marker of PAHs, was not present in concentrations exceeding the European limit of 2 µg/kg. No soy protein additives were detected in the traditional products; all samples tested negative for soy DNA via specific sequence amplification. In contrast, industrial products may be considered less beneficial to consumer

health due to detectable nitrite levels, higher benzo[a]pyrene concentrations, and the presence of undeclared soy protein in some samples. We concluded that traditional pork products are characterized by higher protein, fat, and collagen content and reduced water content, supporting their classification as higher biological value foods.

Biography

Tăbăran Alexandra is an Associate Professor at the University of Agricultural Sciences and Veterinary Medicine (USAMV) Cluj-Napoca, within the Faculty of Veterinary Medicine, graduated as MS in 2010. She received her PhD degree in 2013 at the same institution. Many of her works contribute to identify the risk of zoonotic transmission through contaminated food, but also her research also addresses hygiene practices in meat processing environments. She authored 45 peer-reviewed, full papers published in journals indexed in WOS with high impact factors (up to 5.3 IF). She has a Hirsch index of 17 and an i10 of 26.

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The associations between energy and food groups containing dietary fiber and defecation among university students in Japan

Few studies investigated the associations between energy intake at each meal and defecation. Many studies have shown that having dietary fiber prevents constipation, but the results of these studies are inconsistent. The aim of this study is to clarify the associations between energy intake at each meal and food groups containing dietary fiber and the defecation, especially frequencies of Bowel Movement (BM) and stool forms.

We conducted a cross-sectional study of questionnaire and dietary surveys among students in Japan from May 2018 to May 2024. We divided 437participants (88: Male, 349: Female) into 3 groups according to the frequency of BM, and performed multinomial logistic analyses using 3 or 4 times BM per week (low), and less than twice BM per week (very low) versus 5 or more times BM per week (normal) as the outcome, with energy and food groups containing dietary fiber as the main explanatory variables. The Bristol Stool Form Scale (BSFS) was used to judge the condition of the stool, and BSFS 1 and 2 were classified as the hard stool, 3-5 as the normal stool, and 6 and 7 as the diarrhea stool. We performed binomial logistic analyses using the hard stool versus the normal stool as the outcome, with energy and food groups containing dietary fiber as the main explanatory variables.

In males, higher breakfast energy intake was inversely associated with low frequency of BM. A cut off point for breakfast energy intake was 251 kcal [sensitivity=77%; specificity=85%; area under the curve=0.76]. In females, no significant associations were observed between energy intake and frequency of BM. In females, higher vegetable intake was inversely associated with very low frequency of BM. In males, no significant associations were observed between food groups containing dietary fiber and frequency of BM. There were no significant associations between energy intake and food groups containing dietary fiber and stool forms in both males and females.

Biography

Dr. Tomiyo Nakamura has her expertise in preventing cancer. From 1992 she was engaged as a leader of registered dietitians, in clinical trials targeting cancer at the Osaka medical Center for cancer and cardiovascular diseases, and began to study the relationship between cancer and nutrition. She obtained her Ph.D. degree from the Osaka University Graduate School of Medicine in 2010. In 2013 she was appointed Professor of Nutrition, Kochi of University. In 2015 she was appointed Professor of Food Science and Human Nutrition, Ryukoku University. Currently, she is a visiting researcher at Ryukoku University, investigating the relationship between nutrition and cancer in cohort studies.

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Smart Time Temperature Ecolabels (TTE) as catalysts for reducing food waste: Enhancing resource efficiency within the WEFE nexus framework

Over the past decade, food waste and food loss have emerged as significant challenges in the European Union (EU) and the Western Balkans, driven by inefficiencies across the food chain and consumer habits. Approximately 58 million tons of food are wasted annually in the EU, in 2023, from which around 54% comes at the household link of the food chain, contributing to environmental degradation and resource depletion. The Western Balkans face similar issues, compounded by less developed infrastructure and regulatory frameworks. A major contributor to food waste is the abuse of food intake by consumers, often due to a lack of awareness about proper storage and consumption practices. To address this, the implementation of smart time-temperature ecolabels offers a promising solution. These labels monitor the freshness of food products, providing real-time data that can prevent spoilage and reduce waste at critical points in the supply chain. By integrating this technology with an advanced Lifecycle Assessment (LCA) model, the positive impact on the Water-Energy-Food-Ecosystem (WEFE) framework can be quantified. This model assesses the reduction in resource use and environmental impact, demonstrating how smart labelling can contribute to a more sustainable food system. The resulting data can guide policy decisions and promote practices that align with environmental preservation goals across the region.

Biography

Asst. Prof. Dr. Vladimir Kitanovski earned his PhD in Food Science from the University of Food Technologies in Plovdiv, Republic of Bulgaria, in 2017. He currently serves as a professor of Packaging Technology at the Faculty of Technological Sciences, Mother Teresa University in Skopje, where he lectures at both undergraduate and master's levels. He has authored over 15 scientific papers published in reputable international journals and actively contributes as a reviewer for several peer-reviewed journals, including Horizons, Journal of Aquatic Sciences, Turkish Journal of Fisheries, and Food Science and Applied Biotechnology. Dr. Kitanovski has been involved in multiple research-based projects at his home institution. Notably, he led a Proof-of-Concept (PoC) project focused on the development of a smart Time-Temperature Indicator (TTI) as an external package label, supported by the EU4TECH project platform.

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Sirtuin 3 is a major control point for lycopene preventing atrazine-induced cardiac senescence

Atrazine (ATZ), a widely used and persistent environmental contaminant, poses significant risks to human health and food safety. Its association with cardiac fibrosis, oxidative stress, and aging phenotypes in cardiomyocytes is evident. Lycopene (LYC), a potent antioxidant from natural plant extracts, offers protection against cardiovascular diseases and aging. Despite this, the mechanisms of ATZ-induced cellular senescence and LYC's ameliorative effects on this senescence are not well understood. Our in vivo and in vitro investigations using Western blot, immunofluorescence, RT-qPCR, H&E staining, transmission electron microscopy, and SA-β-Gal staining reveal that ATZ/DACT suppresses Sirt3, causing mitochondrial dysfunction, and elevated ROS content and senescence markers in cardiomyocytes, effects that LYC can counteract. Modulation of Sirt3 expression by knockdown or overexpression showed that LYC's mitigation of DACT-induced senescence is Sirt3-dependent. This study confirmed that LYC can maintain mitochondrial function and reduce ROS content by regulating the expression of Sirt3, thereby alleviating ATZ/DACT-induced cardiomyocyte senescence. Our research uncovers the molecular basis of cardiac aging and provides new therapeutic avenues for environmentally induced cardiac aging-related diseases.

Biography

Dr. Xuenan Li studied Clinical veterinary medicine at the Northeast Agricultural University and received her PhD degree in 2020. In March 2024, she began postdoctoral research at The Chinese University of Hong Kong under the supervision of Professor Chi-Chiu Wang. In September 2024, she was hired as a professor at Northeast Agricultural University. She has published more than 29 research articles in SCI (E) journals.

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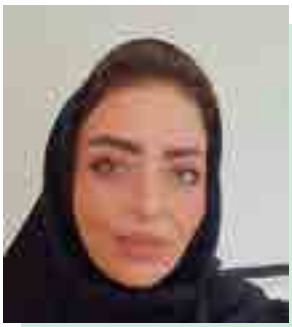
Industrial application opportunities of spectral techniques and artificial intelligence in determining the texture and astrigency properties of persimmon for product standardization

Separating fruits into groups according to ripeness, hardness or chemical properties before storing them for fresh consumption or processing them into a product can provide great advantages. Thus, in this study, research on determining the ripeness and chemical properties of persimmons, which determine their hardness and astringency character, using spectral techniques and artificial intelligence, which can be used in the industry, has been compiled. In this way, it is hoped that higher and standard quality persimmons will be delivered to the consumer and added value will be provided. In general, the appropriate harvest time is determined and all persimmons in the orchards are harvested. However, while some of these fruits are at the desired ripeness, some may be less ripe and some may be over ripe. Therefore, grouping persimmons with the use of spectral techniques and artificial intelligence will provide advantages for using more suitable storage conditions and periods. Although the separation of persimmons according to hardness can be done by personnel, this requires both extra labour and the personnel's hand-squeezing and checking the fruit can inevitably damage the fruit and shorten the shelf life of the fruit. As in the grouping of fruits according to size, it is possible to make groupings such as early ripeness, ripe and overripe with these innovative techniques. Among these fruits, those harvested at early ripeness can be stored longer, while those harvested at excessive ripeness can be stored for a shorter period. Determining the parameters according to the ripeness status of persimmons in the storage or ripening process is important for obtaining standard quality products. It is thought that separating the fruits to be sold according to their tissue hardness can increase product standardization and consumer satisfaction. Packaging of persimmons with tissue hardness between certain limits and removal of persimmons outside these limits from the production line can be done with spectral techniques and artificial intelligence modelling. In studies conducted on this subject, it has been reported that sugar content, firmness, and pH values of persimmons are determined accurately with computer vision and artificial intelligence applications. These values can provide information about the ripeness status and sensory properties of the fruit. With these innovative techniques, it is possible to determine the tannin component which cause astringent taste in persimmons and to remove those fruits with high tannin content from the production line. For this purpose, correlations between spectral measurements and tannin content should be established with R&D studies conducted under industrial conditions and without damaging the fruits. Each fruit can be examined in real time with spectral techniques. In this way, persimmons with high tannin content can be removed from the

production line. Separation of astringent and de-astringed characteristics and tannin contents of persimmon fruit by using visible and near infrared and chemometrics were reported. Thanks to the use of non-destructive methods and artificial intelligence such as hyperspectral imaging system and spectroscopy, for quality assessment of persimmon and fruits were reported. Because of cheap spectral techniques and the development of artificial intelligence, there is now the potential to examine each fruit in real time and instantly under industrial conditions. Thus, it is thought that these new methods can be used in the near future for persimmon to be stored, processed and offered to the consumer in a more standard and high quality.

Biography

Assoc. Prof. Yasin Ozdemir studied Food Engineering at the Ege University and graduated as BSc in 2004. He received her PhD degree in 2011 at the Namık Kemal University. During PhD studies he started to work in Ataturk Horticultural Central Research Institute. He has 3 process patent and 2 national award in his scientific study area. He has taken part in 26 research project which are national and international status. He has 9 private sector supported food technology projects. Ozdemir also take parts as a researcher in international project focused on bioaccesibility and food science/technology. He published more than 100 article in international journals and congress proceedings.



Dr. Zahra Latifi

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Functional drink containing active herbal compounds to modulate the immune system and improve oxidative stress

Free radicals are generated across various biological and biochemical systems within the human body, exhibiting the potential to degrade essential biomolecules and macromolecules, including lipids, proteins, and nucleic acids. Free radicals are regulated by a complex system of defence mechanisms that mitigate oxidative damage. However, in recent years, human lifestyles have undergone significant changes due to globalization, economic growth, and rapid advancements in science and technology. Contemporary unhealthy lifestyle factors, including the increasing prevalence of inadequate and unbalanced diets, chronic stress, exposure to harmful environmental conditions, the emergence of new diseases, excessive use of electronic devices such as mobile phones, and the widespread consumption of drugs, stimulants, and various medications, have contributed to heightened oxidative stress within the body. Consequently, this exacerbates immune system dysfunction.

The human immune system comprises multiple interrelated components that collectively play a crucial role in maintaining overall health. Notably, oxidative stress is a key factor in the ageing process and the progression of various diseases. Extensive evidence suggests that specific nutritional interventions, particularly the consumption of functional foods enriched with natural antioxidants and bioactive compounds, can significantly enhance immune system function while reducing oxidative stress.

Beverages serve as an effective medium for delivering essential nutrients and bioactive compounds, enhancing their bioavailability within the body. However, many commercially available beverages are of suboptimal quality and lack rigorous scientific evaluation regarding their health effects. The presence of ingredients such as artificial sweeteners, additives, preservatives, and synthetic flavouring agents has led experts in the field to discourage their regular consumption. As a result, there is a clear and pressing need within the food industry for health-oriented and functional beverages.

Global consumption trends indicate a growing preference for functional beverages due to their nutritional benefits. The development of plant-based functional beverages presents a promising approach to mitigating the adverse health effects associated with unhealthy

lifestyles. Additionally, one of the key advantages of plant-based beverages is their suitability for individuals with dietary restrictions, including vegetarians and those with lactose intolerance.

I my research, through extensive experimentation on laboratory animals and human subjects, including clinical trials, a novel plant-based beverage has been developed for the first time. This product is free from sugar, fat, salt, and calories while offering significant health benefits, such as immune system modulation and oxidative stress reduction. Furthermore, it has no adverse effects or contraindications, ensuring consumer safety. From a production perspective, it represents a cost-effective and economically viable option for manufacturers. Given its health-oriented formulation, this innovative beverage serves as an attractive choice for today's health-conscious consumers.

Biography

Dr. Latifi earned her Master's degree in Food Industry in 2017, after which she promptly pursued a doctoral program, completing her Ph.D in Food Technology with distinction at the Islamic Azad University, Nur Branch, in 2022. For two years, she worked as a researcher at the Centre for Immunogenetics Research of Professor Saeed Abedini Kenari and also at the Pasteur Institute of of North (Amol) alongside Dr. Mehrab Nasiri Kenari. She joined the Elite Foundation in 2019, and in 2022, she was recognized as the foremost scientific elite in the country within the field of the food industry, achieving distinction across all three domains: education, research, and culture. She has conducted extensive research in food formulation and micronutrients. In addition to conducting new research projects, she currently serves as a university lecturer. She has presented papers at many international conferences and published more than hundreds of articles in different journals. Her scientific output so far includes the publication of 38 books and hundreds of articles in the field of food science and technology.

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Project EQVEGAN offers innovative trainings for food industry to strengthen competitiveness on the food market

Over the past decade, the food industry worldwide has experienced profound transformations, driven by urgent issues such as sustainability, health concerns, and a widening skills gap in the job market. One of the most remarkable changes has been the rapid technological advancements, including the integration of information technology, artificial intelligence, automation, and robotics. These innovations have not only displaced certain jobs but also created a pressing demand for new skill sets. The food industry, in particular, faces unique challenges as consumers increasingly demand plant based foods, including vegan alternatives for reasons of sustainability, animal welfare, and dietary health.

This rise of plant-based foods goes in line with the concept of “Planetary Health Diet”, that is a powerful worldwide movement nowadays, fueled by both vegan and flexitarian consumers. Vegans are particularly consciously avoid all meat and animal products, while flexitarians reduce their meat consumption without completely eliminating it. Both groups wield significant influence over the dietary choices of their peers, including friends and family. Although the market for vegan products is still in its early stages, it is poised for substantial growth and stabilization within the next two decades.

To effectively bridge the skills gap created by these emerging trends, the European Union supported the EQVEGAN project (European Qualifications & Competences for the Vegan Food Industry), through the Erasmus+ Programme (the Sector Skills Alliance Programme, SSA) as part of the Key Action 2 projects, executed in the years 2020-2023. This project involving 15 institutions from 11 countries, aimed at tackling skills gaps, by identifying sector specific labour market needs and demand for new skills with regard to one or more occupational profiles, or by enhancing the responsiveness of initial and continuing VET systems, at any level, to sector–specific labour market needs. The project was dedicated to providing comprehensive training in essential areas such as soft skills, green skills, digital and automation skills, and cutting-edge plant-based processing technologies. Furthermore, the EQVEGAN project aimed to establish job profile certifications and create valuable work-based learning opportunities, ensuring that workers remain at the forefront of industry developments.

The EQVEGAN project has successfully launched training programs that cover the latest developments in plant-based processing, green skills, digitalization, and automation. These programs have equipped numerous professionals with the skills needed to thrive in the evolving food industry. The achievements of this project will be presented in detail at the meeting .

Biography

Zbigniew Krejpcio graduated from chemistry (Poznan University of Technology, Poland), (1985), received honors and academic positions (Ph.D. food technology and nutrition 1994, habilitation 2023, professor 2011). He is a leader of the Food Toxicology and Bromatology Group (Department of Human Nutrition and Dietetics, Poznan University of Life Sciences). He was a post doc at the University of British Columbia, Vancouver, Canada (1997), Fulbright Scholar at the University of Alabama at Tuscaloosa, USA (2018-2019), trainings (i.e. UK, Belgium, Italy, Netherlands), supervisor of 4 Ph.D. over 100 MS theses, involved in several international (EU) and national projects, published over 200 research articles.

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Optimization of zearalenone and trichothecenes detection by GC-MS

Mycotoxins are potentially toxic secondary metabolites produced by many filamentous fungi from genera Fusarium, Trichthecium, Myrothecium, Stachybotrys and Xylaria. In recent decades, more efficient analytical methods (with higher sensitivity and resolution) have been progressively established, making the GC method one of the suitable and advantageous choices for the qualitative and quantitative determination of mycotoxins. In this study, the GC-MS technique was optimized for the detection of zearalenone and several trichothecenes, including FUS-X, NIV, DAS, HT-2, NEO, T-2 triol, T-2 tetraol, DON, 3-ADON, 15-ADON, and T-2, to ensure the food safety of food. This approach utilizes a QuEChERS-based extraction technique, followed by chromatographic optimization through two different derivatizing agents. The optimized method was rigorously assessed for calibration accuracy, matrix interference, detection sensitivity, and quantitation limits, demonstrating consistent and acceptable recovery rates across all target mycotoxin analytes. Since the gradient of temperature is one of the most important parameters for the mycotoxin analytical separation efficacy in the chromatographic column, several oven programs were investigated. Therefore, initial temperature, final temperature, heating rate, and holding time were carefully optimized in this study to enhance the chromatographic performance of mycotoxins within the shortest possible analysis time. In addition, the type of derivatization reagents and derivatization conditions especially the temperature and time of reaction, were optimized. Few detailed specifications are found in the literature about this issue, and it is a step of paramount importance for mycotoxin analysis by GC-MS. To sum up, a rapid detection method for the detection of zearalenone and trichothecenes has been developed, providing chromatographic information on selected mycotoxins separation carried out in 15 minutes. This multi-analyte approach offers significant practical benefits, including straightforward implementation, cost-effectiveness, and high-throughput capability, making it a robust solution for comprehensive mycotoxin surveillance in complex food samples.

Biography

Jia studied School of Food Science and Engineering at the Wuhan Polytechnic University, China and graduated as MS in 2023. He then joined the research group of Prof. Jesus Simal on agri-food science and technology at the University of Vigo, Spain Faculty of Science.

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Antagonistic and synergistic effect of the probiotic yeast *saccharomyces boulardii* on the adhesion of *Candida glabrata*

Growing resistance of pathogenic yeast Candida glabrata to many classes of antifungal drugs has stimulated efforts to discover new agents to combat a rising number of invasive C. glabrata infections. One promising strategy is the use of probiotic microorganisms, Saccharomyces boulardii among them, have been tested as potential biotherapeutic agents. The aim of this study was to investigate the effect of the probiotic yeast S. boulardii on the adhesion of C. glabrata at different temperatures, pH values, and in the presence of three important antimycotics, such as fluconazole, itraconazole and amphotericin B. The method used to assess adhesion was crystal violet staining. The selection of antimycotics concentrations used in the adhesion assay was based on minimum inhibitory concentrations obtained by the CLSI, standard M27-A2 method. Our results showed that despite the nonadhesiveness of S. boulardii cells, probiotic yeast significantly suppressed the adhesion of C. glabrata. On the other hand, a slight stimulatory effect was observed in some C. glabrata strains, which highlights the importance of strain specificity and opens up further research interests. When environmental conditions are considered, temperature and pH significantly influenced co-culture adhesion of C. glabrata and S. boulardii. As expected, exposure to various concentrations of amphotericin B significantly reduced the adhesion of C. glabrata strains both in a single culture and co-culture with S. boulardii. Therefore, it can be speculated that S. boulardii could substitute the effect of antimycotics in a range concentrations and with specific type of strains. This would certainly change the view on the treatment of yeast infections in the future.

Acknowledgments: Zorica Tomičić thanks Provincial Secretariat for Higher Education and Scientific Research, Autonomous Province of Vojvodina, Republic of Serbia (project No. 142-451-3493/2023-01).

Biography

Dr. Zorica Tomičić is employed as a Senior Research Associate at the Institute of Food Technology in Novi Sad (FINS). Researcher with exceptional experience in amino acid analysis of food and feed, microbiological safety and food functionality. She has authored and co-authored more than 90 scientific papers, including 26 published in international journals, alongside contributing to 7 technical solutions. She has contributed to 3 international projects funded under the Horizon 2020 program, as well as nine national projects.

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POSTER PRESENTATIONS

Agáta Bendová*, Paula Večeříková, Tereza Radvanová, Kristýna Živná, Helena Hudečková, Julie Hoová, Ivana Márová

Institute of Food Science and Biotechnology, Faculty of Chemistry, Brno University of Technology, Czech Republic

Dual fermentation of cereals: Boosting bioactivity with *Hericium erinaceus* and probiotics

Hericium erinaceus is a medicinal mushroom with neuroprotective and antioxidant properties, whose bioactive compounds are being studied for applications in functional foods and nutraceuticals. Cereal substrates provide a suitable medium for its cultivation, as they are rich in complex carbohydrates, fiber, and essential nutrients that support fungal growth and the production of secondary metabolites. At the same time, cereals are nutritionally valuable and easily digestible, making them an ideal base for the development of functional foods enriched with bioactive compounds formed during the fermentation process.

This study investigates the effects of cultivating the medicinal mushroom *Hericium erinaceus* on the nutritional and biological properties of various cereal substrates, followed by lactic acid fermentation using the probiotic bacterium *Lactobacillus rhamnosus*. The two-step biotechnological approach involved fungal mycelium growth on gluten-free or partially gluten-free substrates, followed by probiotic fermentation aimed at enhancing the bioavailability and bioactivity of naturally occurring compounds.

The cultivation of *H. erinaceus* resulted in a significant increase in the levels of free phenolic compounds, flavonoids, tocopherols, and ergosterol. Antioxidant activity as well as the content of water-soluble proteins and lipids, was also markedly enhanced. This enhancement is attributed to the enzymatic activity of the fungus, which may release bound phenolics from fiber or protein matrices within the substrate.

After fermentation with *L. rhamnosus*, samples were analyzed for lactic acid content, antioxidant activity, and antimicrobial potential. Fermentation led to a moderate but statistically significant increase in antioxidant capacity and bioactive compound concentration. Antimicrobial activity was evaluated against *Escherichia coli* and *Micrococcus luteus*. The strongest inhibitory effects were observed in fermented extracts where both fungal and probiotic activities were combined. Cytotoxicity was evaluated using the MTT assay on human Caco-2 cells, showing no toxic effects.

In conclusion, the combination of *Hericium erinaceus* cultivation and probiotic fermentation significantly enhances the nutritional and biological quality of cereal substrates. These results support the potential application of fermented fungal–cereal matrices as functional food components or dietary supplements with synergistic antioxidant and antimicrobial properties.

Biography

Ing. Agáta Bendová obtained her Master's degree in 2019 at the Faculty of Chemistry, Brno University of Technology, Czech Republic. She is currently pursuing her PhD at the same faculty in the field of Food Chemistry and Biotechnology under the supervision of Prof. Ivana Márová. Her research focuses on the development of novel cereal-based products enriched with bioactive compounds for health-promoting applications. She is a co-author of two scientific publications and regularly presents her results at international scientific conferences.

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Rheological, microbiological and consumer characteristics of fermented whey beverages made from organic cow or goat milk with organic rose or sea buckthorn juices

This study aimed on creating fermented whey beverages enhanced with organic fruit juices (rosehip or sea buckthorn). Our research involved experiments with unpasteurized organic cow or goat whey (both sweet and sour) combined with organic sea buckthorn or rosehip juices, fermented using lactic acid bacteria. We evaluated the rheological and microbiological properties of these beverages and conducted consumer evaluation. The aim was to repurpose liquid whey, often regarded as waste on organic farms, into a valuable product, thereby expanding the range of fermented beverages available to consumers. By using specific strains of lactic acid bacteria, we improved the health benefits of the final products, potentially aiding local producers in waste reduction and compliance with European Green Deal standards. Our results showed that adding organic fruit juices (rosehip or sea buckthorn) significantly enhanced the organoleptic quality and rheological properties of the fermented whey beverages. These beverages demonstrated low viscosity, appealing sensory traits, and high consumer acceptance. Microbiological safety was confirmed, with minimal pathogenic microorganisms detected. Combining organic cow's and goat's whey with organic fruit juices not only boosted health benefits but also increased the variety of functional dairy products.

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Biography

Prof. Bartosz Sołowiej, Ph.D., D.Sc, Vice-Rector for Science and International Cooperation of the University of Life Sciences in Lublin. He graduated from the prestigious program "Top 500 Innovators - Science. Management. Commercialization" at the UC Berkeley in the United States, and "Leaders in University Management" at the TUM of Munich, Germany. Lecturer, scholarship holder e.g., in Australia, Canada, Slovakia, Serbia, Isreal and China. Expert at the European Institute of Innovation and Technology (EIT). Author/co-author of many scientific publications. He works on improving the functional properties of food products, mainly dairy products; designing new products for athletes and physically active people.

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Enhancement of bioactive polymers in *Chlorella pyrenoidosa* using moderate electric field-based fermentation

Microalgae represent a highly promising resource for new food materials due to their environmentally sustainable nature, high nutritional value (e.g., essential amino acids, bioactive peptides, omega-3 fatty acids, and polyphenols) and resilience to climate variability, allowing for stable cultivation and harvesting. To utilize that, innovative microbial fermentation technology was employed to convert it into high value-added materials. Aiming to evaluate the effect of square-waving Moderate Electric Field (MEF) on bioconversion using glutamate as a substrate for glutamate synthetase in Bacillus subtilis, this study compares the efficiency of Conventional Fermentation (CF) with that of Electro-Fermentation (EF) to produce Poly-γ-Glutamic Acid (γ- PGA). The medium used for the growth of the strain was composed of 1% Chlorella, 2% glucose, and 10% Monosodium L-Glutamate (MSG). The B. subtilis starter culture was pre-incubated in 5% skim milk for 24 hours before being inoculated at a concentration of 5%. In the same conditions, MEF-assisted fermentation was conducted using an Alternating Current (AC) of 0.6 A, 50% duty cycle with a square-pulse waveform for 48 hours. After 12 hours, the viable bacterial count demonstrated a logarithmic growth rate of 31.08% compared to the initial state. Additionally, the production capacity of mucilage showed an approximately 21.94% increase compared to conventional fermentation methods. Chlorella, a protein-rich material, was hydrolyzed into lower molecular weight compounds by the protease activity of B. subtilis, leading to a progressive increase in tyrosine content over the culture period. The tyrosine concentrations of final products were 5,491 ppm for CF and 5,685 ppm for EF. Overall, EF indicated superior production yields of bioactive compounds relative to CF, primarily attributed to augmented enzymatic activity. This improvement is hypothesized to arise from increased cell membrane permeability in microorganisms, which is induced by electropermeability under electrical stimulation. Consequently, Chlorella-based material metabolized by B. subtilis is enriched with γ-PGA, peptides, and probiotics, making it a sustainable food additive for the food industry. Also, EF offers a promising pathway for the establishment of a novel paradigm in bioconversion processes, potentially transforming future biotechnological applications through substantial improvements in efficiency and technological innovation.

Biography

Beom-Su Cho studied Food Science & Technology at Keimyung University, Korea, and obtained his MS degree in 2023. He then joined the Ph. D. program at Pukyong National University in 2024. His research focuses on fermentation-based functional food innovation, including the development of probiotic strains and bioactive compounds from traditional Korean fermented foods. He has participated in multiple research projects related to food safety and biotechnology. He has also worked as a researcher at CHAEMING Co., Ltd., contributing to business and product development. His current research explores the application of electric field technology in fermentation and processing.

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Efficacy and safety of green-lipped mussel powder in adults with knee osteoarthritis: A randomized, double-blind, placebo-controlled trial

Objectives: This study aimed to evaluate the clinical efficacy and safety of Green-Lipped Mussel (GLM, *Perna canaliculus*) powder supplementation in reducing knee joint pain and improving functional outcomes in adults with Knee Osteoarthritis (KOA).

Methods: A total of 80 participants aged 40–75 years with chronic knee pain were enrolled in a 12-week, randomized, double-blind, placebo-controlled trial. Participants received either GLM powder (1,000 mg/day) or a matched placebo. Outcomes included changes in Visual Analog Scale (VAS) pain scores, Knee Injury and Osteoarthritis Outcome Score (KOOS) subscales (pain and ADL), global satisfaction, and safety.

Results: At baseline, there were no significant differences between groups in demographic or clinical characteristics. After 12 weeks, the GLM group demonstrated a significantly greater reduction in VAS pain scores compared to the placebo group (−22.5±13.3 mm vs. −12.3±11.2 mm; p=0.0017), exceeding the threshold for clinical relevance. KOOS subscale scores also improved significantly in the GLM group for both pain (mean difference +7.5 points; p=0.002) and activities of daily living (mean difference +7.9 points; p=0.003). Global treatment satisfaction was higher in the GLM group (p=0.005), reflecting improved perceived benefit. No serious adverse events were reported in either group. Minor gastrointestinal discomfort and headache were infrequent and occurred at similar rates in both groups. Compliance exceeded 94% in both groups, indicating good tolerability of the intervention.

Conclusions: Twelve weeks of oral GLM powder supplementation significantly reduced knee joint pain and improved functional outcomes in individuals with KOA. GLM appears to be a safe and effective complementary option for the long-term management of joint symptoms.

Keywords: Knee Osteoarthritis, Green-Lipped Mussel, Perna Canaliculus, Joint Pain, Randomized Controlled Trial, Complementary Therapy

Biography

Shin Bongjin earned his Master's degree in 2023 from the School of Korean Medicine at Pusan National University, where he is currently pursuing a doctoral program. He is also undergoing residency training in the Department of Korean Rehabilitation Medicine at Pusan National University Korean Medicine Hospital.

Consuelo Lobato-Calleros[1*], Adriana Herrero-Galindo[1], Diana Itzel López-Monterrubio[1], E. Jaime Vernon-Carter[2]

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Effect of thermal, ultrasonic, and pH shifting treatments on the structure, physicochemical properties, and functional performance of Huauzontle protein

Huauzontle *(Chenopodium nuttalliae Saff.)* is an underutilized pseudocereal native to Mexico, characterized by its high-quality protein content. In this study the effects of thermal, ultrasonic, and pH-shifting treatments on the structural, physicochemical, and functional properties of Huauzontle protein were investigated. Fourier-Transform Infrared (FTIR) spectroscopy revealed significant alterations in the secondary structure of the proteins, a notably decrease in β-sheet and β-turn structures and an increase in α-helix content. This shift is associated with enhanced surface activity and improved interfacial stability. All treatments promoted protein unfolding and exposure of hydrophobic and reactive groups, facilitating new protein–protein interactions. These structural modifications improved functional properties of the Huauzontle protein, including reduced particle size, increased solubility, enhanced rheological behavior, and superior emulsifying and foaming capacities and stability. Specifically, thermal treated protein demonstrated high emulsifying activity and emulsion stability, suggesting its suitability for use in sauces and dressings. Protein modified at pH 11 showed enhanced foaming capacity and stability, making it appropriate for bakery and pastry applications. Meanwhile, ultrasonic treated protein exhibited excellent solubility, indicating potential for use in high-protein beverages. Overall, this study provides new insights into the functionalization of huauzontle protein and supports its application as a versatile ingredient in the formulation of novel food products.

Biography

Consuelo Lobato-Calleros is professor of Agro-Food Science and Technology and Chemistry at Universidad Autónoma Chapingo, México, since more than 30 years. She received his PhD in Biological Sciences from Universidad Autónoma Metropolitana, México in 1997. Dr. Lobato-Calleros has more than 15 years of experience in Food Science and Technology research and is author of more than 50 scientific publications. One of its main areas of research is the evaluation of novel nontraditional biopolymers sources.

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Bacterial taxonomic characterization of Mexican artisanal Cincho cheese via 16S rRNA sequencing

Mexican artisanal cheeses are traditionally produced using raw and/or pasteurized milk. In Mexico, there are at least 50 types of artisanal cheeses, among which, according to various sources, Cincho cheese from the states of Morelos and Guerrero stands out as one of the most representative. Therefore, the aim of this study was to characterize the bacterial diversity of Cincho cheese. To this end, three cheese samples (Q1, Q2, and Q3) with 10 days of ripening were collected and analyzed using both culture-dependent methods (plate pour technique) and culture-independent methods through 16S rRNA gene amplicon sequencing. The cheeses showed counts of mesophilic aerobic bacteria ranging from 9 to 9.99 log CFU·g^{-1}, total coliforms from 3 to 8.9 log CFU·g^{-1}, fecal coliforms >1100 CFU·mL^{-1}, Staphylococcus spp. from 6.3 to 8.0 log CFU·g^{-1}, yeasts from 8.1 to 8.9 log CFU·g^{-1}, and lactic acid bacteria from 9 to 12 log CFU·g^{-1}. Through 16S rRNA gene sequencing, a total of 44 bacterial genera were identified. The most abundant genera were *Acinetobacter* (23.48%), *Aerococcus* (23.22%), *Leuconostoc* (21.18%), *Streptococcus* (20.61%), *Enterococcus* (18.64%), *Lactococcus* (12.09%), *Enhydrobacter* (10.24%), *Lactobacillus* (8.3%), Staphylococcus (7.96%), and *Pantoea* (4.91%). The findings of this study contribute to a better understanding of the bacterial diversity in Cincho cheese, which may help improve the production techniques of this mexican artisanal cheese, as well as its safety and quality parameters.

Biography

Dr. Aguirre-Mandujano studied chemical engineering at Universidad Nacional Autónoma de México and graduated as PhD in Biotechnology in Universidad Autónoma Metropolitana, México, in 2009. He is professor of Agro-Food and Technology and Chemistry at Universidad Autónoma Chapingo, México, since more than 40 years. Dr. Aguirre-Mandujano has more 20 years of experience in Food Science research and is author of more than 25 scientific publications in SCI journals.

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Xylaria karsticola NBIMCC 9097: Insights into controlled in vitro cultivation and the synthesis of antimicrobial bioactive metabolites

Xylaria karsticola was isolated from the basidiocarp of Macrolepiota procera (Basidiomycota), from Stara Planina Mountain, Bulgaria and it was the second report for such species found in Europe. The isolate was deposited in the GenBank database under accession number MW996752 and in the National Bank of Industrial Microorganisms and Cell Cultures of Bulgaria under accession number NBIMCC 9097. Phylogenetic analysis grouped this isolate with other *X. karsticola* strains. *Xylaria* karsticola is a species within the *Xylaria* genus, known for its diverse bioactive metabolites. Specific methodologies for controlled submerged cultivation for mycelium growth stimulation could influence nutraceutical compounds production. Based on the in vitro cultivation this *X. karsticola* NBIMCC 9097 presents an interesting source for future screening of natural secondary metabolites with antimicrobial properties. This research aimed to evaluate key bioprocess parameters through mathematical modeling of the growth kinetics of *X. karsticola* and to assess the antimicrobial activity of the resulting biomass. The cultivation process was modeled and the mathematical modeling accurately described the cultivation kinetics, with experimental data aligning well with the applied models. Antimicrobial activity was determined through the disk diffusion and broth microdilution methods. The disk diffusion method produces fast and reliable results regarding the presence or absence of antimicrobial activity, which makes it suitable for screening. Sixteen test-microorganisms, eight of which were pathogens or conditional pathogens, associated with food and cosmetic products were screened. The mycelium biomass extracts of *X. karsticola* obtained with methylene chloride demonstrated antibacterial activity towards E. coli ATCC 8739 with a clear inhibition zone of 9,5 mm, Pseudomonas aeruginosa ATCC 9027 (d=8 mm), Candida albicans ATCC 10231 (d=8 mm) and Bacillus subtilis ATCC 6633 (d=9 mm).

For the determination of the Minimal Inhibitory Concentration (MIC), only the extracts, which demonstrated significant antimicrobial activity were selected. The hexane and ethyl acetate extracts demonstrated the highest antimicrobial activity towards *Pseudomonas aeruginosa* ATCC 9027 and the MIC was respectively 0.067 mg/mL and 0.059 mg/mL. The MIC of the methylene chloride extract towards *E. coli* ATCC 8739 was 2.12 mg/mL, and a concentration of

3,22 mg/ml was sufficient to suppress the growth of *Candida albicans* ATCC 10231.

The findings of this study suggest that the newly identified *Xylaria karsticola* holds significant potential. With further research and additional investigations, it could be developed into a promising source of nutraceuticals with antimicrobial properties.

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Biography

Dr. Galena Angelova received her Ph.D. at the University of Food Technologies, Bulgaria in 2002. Her main scientific interests are related to mushroom biotechnology and mycoremediation processes. In the past five years, she has been engaged in the biotechnology of high medicinal mushrooms. During this period, she has seven publications related to adaptation of cultivation methods and determination of biological activities of higher medicinal fungi of the class Basidiomycota.

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Evaluation of the quality of professional training by teachers as part of the EQVEGAN project

Over the past few years, there has been a growing number of consumers interested in food made from plant-based raw materials. Therefore, the number of consumers aiming to reduce their meat consumption is increasing globally. This, in turn, has led to a rapid rise in demand for vegan and vegetarian products.

The key to success for food producers lies in leveraging innovative technologies while enhancing their professional qualifications. To address these challenges, The EQVEGAN project (European Qualifications & Competences for the Vegan Food Industry) has been funded by the European Commission through the Sector Skills Alliance Programme (SSA), as part of the Key Action 2 projects. Sector Skills Alliances aims at tackling skills gaps, by identifying sector specific labour market needs and demand for new skills with regard to one or more occupational profiles, or by enhancing the responsiveness of initial and continuing VET systems, at any level, to sector–specific labour market needs. The project consortium involved 15 institutions from 11 countries (including: Governmental agencies, education & training, industry & representatives, multipliers). The project's goal was to support the rapidly changing plant processing sector by improving staff qualifications and enhancing the mobility of specialists within Europe. As part of the project, a vocational skills portal was created for those working in vegan food production, along with a European certification system for their qualifications (see: eqvegan.eu).

One of the consortium partner was the Poznań University of Life Sciences that conducted professional trainings in line with EU quality standards and reference tools at two levels: EQF6 and EQF7. The trainings consisted of both theory and practice (lectures and practical sessions) across four modules: Plant-based processing (PBP), Green Skills (GS), Digitalisation and Automation (DA), and Soft Skills (SS), delivered in a hybrid mode (on line, on site). At the end of the trainings, both students and teachers were asked to evaluate the overall quality of trainings via an online questionnaire. The concise results of the teachers' evaluation is presented, as follows:

- Majority of teachers (91%) agreed that the modules' content was relevant and up-to-date.

- All the learning outcomes (for each module) were considered fully achieved.
- Almost 60% of teachers strongly agreed that sufficient resources have been dedicated to implement the courses, while few suggested some minor improvements or additional references, or more teaching hours (i.e. nutrition, new product commercialization) would be recommended in the future.
- Almost all lecturers were fully satisfied with the courses.

In summary, the survey results reflect a clear and positive evaluation of the courses by the teachers, indicating that the courses were well-prepared and effectively delivered.

Funding by EU ERASMUS+ Sector Skills Alliance (621581-EPP-1-2020-1-PT-EPPKA2-SSA-EQVEGAN).

Biography

Dr Kurek obtained his PhD in Agricultural Sciences in the field of Food Technology and Nutrition at the Poznań University of Life Sciences (PULS), Poland in 2023. Currently, he is employed at the Department of Human Nutrition and Dietetics (Bromatology and Food Toxicology Team) as a specialist at the same institution. She is co-author of 8 publications (all present in the JCR database). His research interests include metabolic disorders, especially diabetes, and the use of health-promoting properties of bioactive food ingredients in vitro and in vivo models, as well as health promoting potential of edible insects.

Kyeong-Eun Moon

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Analysis of isoflavone content in processed soybean products

Isoflavones, a class of phytoestrogens predominantly found in soybeans, have been widely studied for their potential health benefits, including antioxidant, anti-inflammatory, and estrogen-like activities. As interest in functional foods continues to grow, understanding the distribution and composition of isoflavones in commonly consumed soybean-based processed foods has become increasingly important. This study analysed the total isoflavone content and the composition ratios by form in 71 soybean processed products distributed in Gyeonggi Province and through online markets in Korea. To better evaluate the influence of processing methods on isoflavone profiles, the samples were categorized into tofu products, fermented products, and other processed products. Isoflavones were extracted using 80% methanol prior to analysis, and their contents were determined using High-Performance Liquid Chromatography (HPLC). Individual isoflavones were quantified and classified into glucoside (including malonyl and acetyl conjugates) and aglycone forms. The results showed that the average total isoflavone content was highest in soy powder, followed by bean curd stick, roasted soy powder, soybean, roasted soybean, natto, cheonggukjang, paper tofu, tofu, soybean curd residue, soft tofu, and soybean water. The ratio of glucoside isoflavones to total isoflavones was highest in soybeans (97.84%) and soy powder (97.52%), whereas the ratio of aglycone isoflavones was highest in cheonggukjang (38.49%). Since isoflavones must be hydrolysed to aglycone forms in the human body to exhibit physiological activity, the findings of this study may help consumers and food developers choose soybean-based products with higher nutritional value and functional potential.

Biography

Kyeong-Eun Moon received M.S. degree in Food Engineering from the Graduate School of Korea University in 2018. She worked for four years at the Nong-Hyup Food Research Institute, where she was responsible for pesticide residue analysis in agricultural products. Currently, Kyeong-Eun is in fifth year at the Gyeonggi Province Institute of Health and Environment, where she conduct safety evaluations of agricultural products, food additives, and sanitary products.

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Effect of organic and conventional cropping systems on bioactive compounds in maize genotypes

Maize cultivation through organic methods promotes environmental sustainability and benefits both producers and consumers by eliminating synthetic fertilizers and pesticides. Over the past few decades, there has been a considerable global growth in both the production and consumption of organic food. As a key ingredient in many food products, maize (Zea mays L.) is one of the most extensively grown cereal crops in the world and provides an essential to human nutrition. Therefore, in order to examine the effects of conventional and organic cropping systems on the nutritional composition and potential for sustainable grain production, the content of total phenolic compounds, phenolic acids, total carotenoids, and antioxidant capacity in four added-value maize genotypes (ZP 5048 red, ZP 552b, ZP QPM13, and ZP 555) recently developed at the Maize Research Institute Zemun Polje, was investigated. The most significant results were concerning the concentrations of total phenolic compounds, phenolic acids, and antioxidant activity, which were, on average, 14.45%, 8.99%, and 16.15% higher in maize grown in organic systems, respectively. This can be one argument to justify organic foods' greater functional potential and health benefits. The content of total phenols in conventional cropping ranged from 2395.01 μg GAE/g to 2626.91 μg GAE/g, while in organic cropping the range was 2340.71 μg GAE/g to 3296.57 μg GAE/g. The p-coumaric content in maize genotypes ZP 552b, ZP QPM13, and ZP 555 was 9.68%, 17.07%, and 31.97% higher in organic than in conventional cropping systems, respectively. Although it can be stated that the organic cropping system contributed to the improvement in antioxidant capacity, our results showed that genotype had a predominant impact. This is most noticeable in the case of maize genotype ZP 5048 red, which showed the opposite trend and had a lower content of carotenoids, total phenols, antioxidant capacity, and phenolic acids in the organic cropping system. These results suggest that while organic cropping systems may enhance the functional potential and nutritional value of maize, genotype selection remains the key factor in achieving optimal quality and sustainability in food production. Future studies should explore a broader range of maize genotypes and environmental conditions to fully elucidate the complex interactions between cultivation system and genetic potential.

Biography

Dr. Marijana Simić graduated from the Faculty of Agriculture, Department of Food Technology and Biochemistry, University of Belgrade, where she also defended her PhD thesis in 2016. Since 2011, Dr. Marijana Simić has been employed at the Maize Research Institute (Belgrade, Serbia) in the Group of Food Technology and Biochemistry. Her main research interests are related to the bioactive compounds, cereal chemistry, technological and functional properties of cereal-based food, food and ingredient processing operations (thermal processing and enzymatic and alkaline hydrolysis).

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Investigation into the safety of herbal medicines distributed in Gyeonggi-do

To investigate the safety of herbal medicines distributed in Gyeonggi-do, the visual and organoleptic examination, lead, cadmium, arsenic, mercury, sulfur dioxide, and total aflatoxin levels were examined on 80 samples. Through organoleptic examination, 6 samples, including *Eucommiae Cortex, Eucommiae Cortex Preparata cum Sal, Ulmi Cortex, Pinelliae Tuber* and *Perillae Folium* of properties and conditions were not met the standard or foreign substances rate exceeded. In heavy metal testing, cadmium levels exceeding the standard were detected in 6 samples, including *Fritillariae Thunbergii Bulbus, Linderae Radix, Paeoniae Radix, Angelicae Gigantis Radix* and *Puerariae Radix* ranging from 0.4 to 1.2 mg/kg. Lead, arsenic, and mercury were shown to be safe in all samples as they met the standard. Sulfur dioxide was below the acceptable standard in most sample, but 34 to 790 mg/kg was detected in 3 samples, including *Moutan Radicis Cortex, Dioacoreae Rhizoma* and *Pinelliae Tuber* exceeding the standard. As a result of total aflatoxin analysis, in 4 samples including Glycirrhizae Radix et Rhizoma and Pinelliae Tuber with total aflatoxin standard for herbal medicines were not detected, but high contents of 32.5 μg/kg and 82.5 μg/kg were detected in 2 samples of *Angelicae Gigantis Radix* without standard. It seems necessary to review the setting of mycotoxin standards for *Angelicae Gigantis Radix*, which is an item that has not been set.

Biography

Myeong-jin Son studied Food engineering at the Pukyong National University in Korea and graduated as MS in 2008. She worked in the food safety field of the National Institute of Fisheries Science for two years and worked at SGS Korea for five years as a research on food safety. She have been working at the Gyeonggi Province Institute of Health and Environment since 2018 and has worked on safety evaluation of food, food additives, and sanitary products. Currently, she is conducting drug analysis at the Food and Drug Research Division of the Gyeonggi Institute of Health and Environment.

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Prebiotic potential of yeasts and microalgae in synbiotic formulations

This work is focused on exploring unconventional and sustainable sources of prebiotic compounds to verify their ability to support the growth and metabolic activity of probiotic bacteria, and subsequently to create stable and effective synbiotic systems. Extracts from cultured yeasts and selected species of microalgae, as well as extracts from commercially available fresh and dried S. cerevisiae, were used as prebiotic substrates for probiotic strains from the genera Lactobacillus and Bifidobacterium. These strains were cultivated in the prepared extracts under controlled conditions, and their growth was compared with the standard MRS medium as a reference. Lactic acid production was determined using HPLC, while antimicrobial activity against selected pathogenic microorganisms and overall metabolic activity were evaluated by precise spectrophotometric methods. In several cases, bacteria achieved higher growth and metabolic activity in yeast and algal extracts than in the control medium, clearly confirming the strong and selective prebiotic effect of these substrates.

Synbiotic systems created by combining probiotics with the prebiotic extracts were subsequently encapsulated in alginate beads using the gentle extrusion method. The resulting capsules were tested for microbial viability after release into MRS medium and for resistance to simulated gastrointestinal conditions in both lyophilized and non-lyophilized forms. Encapsulation markedly improved probiotic survival rates and enabled their gradual and controlled release.

The results confirm that yeasts and microalgae are valuable and rich sources of bioactive polysaccharides that selectively stimulate the growth of beneficial bacteria while providing antioxidant, nutritional, and physical protection. In combination with advanced encapsulation technologies, they represent a promising and innovative basis for the development of sustainable, functionally effective, and technologically feasible synbiotics for use in the food, pharmaceutical, and cosmetic industries.

Biography

Michaela Kubalová studied Chemistry for Medical Applications at the Faculty of Chemistry, Brno University of Technology (BUT), Czech Republic, where she received her Bachelor's and Master's degrees. In 2023, she began her PhD studies in Food Chemistry under the supervision of Prof. Ivana Márová, focusing on the "Study of adaptive mechanisms of selected microorganisms to various substrates and conditions." She works as a doctoral student and research associate at the Faculty of Chemistry, BUT. She has presented her research in several conference posters, covering topics such as yeast and microalgae cultivation, biomass valorization, and microbial stress adaptation.

Petya Stefanova*, Denica Blazheva, Mariya Brazkova, Bogdan Goranov and Galena Angelova

Department of Microbiology and Biotechnology, University of Food Technologies, Plovdiv, Bulgaria

Molecular identification, mycelial growth kinetics and antimicrobial potential of newly isolated medicinal mushroom *Inonotus hispidus* from Bulgaria

Inonotus hispidus is a well-known edible and medicinal mushroom known for its nutritional and therapeutic properties. Because of its enormous biosynthetic potential, over the past 5 years this basidiomycete fungus has attracted the attention of the scientific community. The present study is focused on a newly isolated *Inonotus hispidus* strain from an apple tree (*Malus domestica*) from Haskovo province, Bulgaria. The molecular identification of the isolate was conducted by amplification of ITS1-5.8S-ITS2 region and the strain was identified as *Inonotus hispidus* with 99.12% of confidence. The morphological examination revealed the presence of some specific structures supplementing the morphological characteristics of the fungus. The phylogenetic analysis was conducted using the closest matched ITS sequences from the GenBank database. The presented results showed the phylogenetic relationship between the examined *I. hispidus* strain and other *I. hispidus* strains, as well as other species of genus Inonotus. The effect of nutrient media composition was evaluated by determination of the mycelial growth kinetics, applying the logistic curve model and the reverse autocatalytic growth model. Based on the obtained data, MEA (malt extract agar) was assessed as the most suitable media for in vitro cultivation. In addition, the optimal temperature and pH values for cultivation were determined. The best conditions for the newly isolated *Inonotus hispidus* strain growth were t=28°C and pH=6.5. Submerged cultivation was carried out to obtain biomass, which was further lyophilized and used for assessment of the antimicrobial potential of the fungal strain. The data demonstrated significant antimicrobial activity against all tested bacterial and yeast strains. The best results were achieved for the hot water and hexane extracts against Staphylococcus aureus ATCC 25923, where the Minimal Inhibitory Concentration (MIC) was 0.3125 mg/mL. Similar data was observed for the hexane extract against Klebsiella pneumoniae ATCC 13883 and butanol extract against Escherichia coli ATCC 8739 (MIC=0.3125 mg/mL). The obtained results reveal the vast potential of the newly isolated medicinal mushroom *Inonotus hispidus* for further application in medical and pharmaceutical industry.

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Biography

Dr. Petya Stefanova studied Biotechnologies at the University of Food Technologies and received her Master degree as engineer-technologist in 2004. She completed her PhD in 2013 at the same institution. She obtained the position of a Senior Assistant Professor at the “Department of Biotechnology”, UFT in 2016. Stefanova's main scientific interests are in the field of molecular genetic methods for species identification and phylogenetic analyses. She has published more than 25 research articles in SCI (E) journals. Over the past 5 years, Stefanova has participated in six scientific projects and she is a Coordinator of one of them.

Večeříková Paula*, Bendová Agáta, Bečková Barbora, Kubalová Michaela, Svobodová Veronika, Márová Ivana

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Synergistic interaction between probiotic strains and fruit/vegetable extracts for the development of encapsulated synbiotic supplements

In the era of personalized nutrition and microbiome-focused therapies, symbiotic formulations represent a promising direction for functional food innovation.

This study explores the synergistic interaction between either selected fruit (pear, orange, blackcurrant, dragon fruit, sea buckthorn and apricot) or vegetable extracts (spinach, celery, beetroot, zucchini and carrot), and probiotic strains (Lactobacillus and Bifidobacterium) with the goal of enhancing probiotic growth, metabolic activity and stability.

Freeze-dried extracts from selected plant matrices were tested for their prebiotic potential through fermentation assays, including biomass formation (CFU enumeration), lactic acid production (HPLC) and antimicrobial activity of fermentation products (Broth dilution method). Combinations showing the most pronounced effects were further incorporated into alginate-based encapsulated particles to ensure controlled release and viability during storage.

The results revealed that among the tested plant extracts, blackcurrant and sea buckthorn demonstrated the highest lactic acid production and antimicrobial activity, while pear most effectively supported biomass growth of *Bifidobacterium bifidum*. From the selected vegetables, carrot and spinach extracts promoted the most significant growth of probiotic strains and lactic acid production. Encapsulation of probiotics with selected fruit and vegetable extracts in alginate particles ensured microbial viability and gradual release over 10 days, confirming the stability and functional applicability of the developed symbiotic formulation.

In conclusion, combining probiotics with fruit and vegetable extracts shows strong potential for functional supplement development.

Keywords: Synbiotics, Probiotics, Prebiotics, Encapsulation, Functional Food, Fruit and Vegetable Extracts, Lactic Acid Bacteria.

Biography

Paula Večeříková received her master's degree in Chemistry of Bioactive Compounds from Brno University of Technology, Faculty of Chemistry in 2023. She is currently pursuing her doctoral studies in Food Chemistry at the same institution. Her research focuses on the development and characterization of probiotic supplements for applications in food and cosmetic chemistry. In addition, she is working on a project involving the design of nanoparticles for precision medicine. Her scientific interests combine microbiology, biotechnology, and material science, aiming to create functional bioactive products with targeted health effects.

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Microalgal protein as a sustainable source of protein: Optimization of alkali extraction

In recent years, there has been a global increase in demand for sustainable and environmentally friendly sources of protein, especially those of plant origin. This trend is driven by both the growing need to feed an increasing population and efforts to minimize the environmental impact associated with the production of animal protein. Microalgae appear to be a promising alternative in this context, mainly due to their high protein content, rapid growth, and relatively undemanding cultivation conditions.

Proteins obtained from microalgae often have a higher content of essential amino acids and a more favorable amino acid profile compared to commonly available plant proteins, which may improve their nutritional value. In some cases, they are also reported to be more digestible, which expands their potential uses in food, nutraceuticals, and animal feed.

This work focuses on optimizing the alkaline extraction of proteins from microalgae biomass. In the experimental part, the effects of various factors, specifically pH, temperature, extraction time, and extraction method, on protein yield were systematically investigated. Based on individual experiments, optimal conditions were identified and subsequently combined into a single extraction protocol.

Some algae and cyanobacteria contain a metabolite called phycocyanin, which is a deep blue pigment. It is a protein complex used as a natural dye and antioxidant, and can also be used in cosmetics and pharmaceuticals. This pigment is typically extracted at milder pH levels using other methods, as it is more susceptible to degradation, and therefore its extraction takes place before the actual alkaline extraction of proteins.

The results obtained contribute to a better understanding of the processes of protein isolation from microalgae and confirm their significant application potential. The implementation of these findings into practice could support the wider use of microalgae biomass in industrial production and represent a significant step towards sustainable and safe protein production for future generations.

Keywords: Microalgae, Alkaline Extraction, Proteins, Sustainable Protein Source.

Biography

Pavlína Sniegoňová received her master's degree in Chemistry for Medical Applications from Brno University of Technology, Faculty of Chemistry in 2022 and she started her doctoral studies in Food chemistry. Her research interests include cultivation of microalgae and yeast, studying their beneficial metabolites and their extraction and isolation, for their possible use in industry. Her research has permitted her travel to international conferences and an internship in Sweden.

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Evaluation of the Plant-Based Processing training (PBP) as part of the EQVEGAN project

In recent years, the number of consumers interested in food produced from plant-based raw materials has been growing. More and more people are paying attention to what they eat and how it affects our world. As a result, the number of vegans, vegetarians and people reducing their meat consumption is growing worldwide. As a result, demand for vegan and vegetarian products is growing rapidly. For food producers who want to follow this trend, it means implementing innovative technologies and simultaneously expanding their qualifications.

In order to meet these challenges, modern training courses have been developed for people who want to improve their qualifications, employees in companies producing food based on plant raw materials.

EQVEGAN (European Qualifications & Competences for the Vegan Food Industry) is a Sector Skills Alliance involving 15 institutions from 11 countries. The aim of the project was to support the rapidly changing plant processing sector in terms of improving staff qualifications and mobility of specialists in Europe. The EQVEGAN project has developed a vocational skills portal for people working in vegan food production and a European system for their certification.

As part of the EQVGAN project, the Poznań University of Life Sciences conducted free training following EU quality and reference tools at two levels, EQF6 and EQF7, in 2022-2023. The trainings included lectures and practical sessions in four modules: Plant-based Foods Processing (technologies for creating substitutes, nutrition, safety, product development - economic and legal aspects), Green Skills, Digitalisation/Automation, and Soft Skills. The learning resources were available free of charge through the ISEKI e-learning platform. The course was very popular, however the number of places was limited. A total of 31 people participated in the training, including 13 people at EQF6 level and 18 people at EQF7 level. The participants of the training were aged between 18 and 50 years. Participants aged 22-30 were over 50%.The majority of the participants were Polish (80%) and 20% were foreigners.

45% of participants declared professional experience related to the food industry, 39% had a background related to food technology and human nutrition and 16% had no qualifications.

Participants were requested to evaluate the courses using the online questionnaire at the end of the entire training.

The majority of respondents agreed or strongly agreed that the course material was appropriate (78%), stimulated their curiosity and motivation (71%), were satisfied with the timetable distribution (88%), found the lectures insightful, helpful, and useful (78%), were satisfied with the reading materials and notes provided. The majority of students felt that the time allotted for assignments reasonable (84%).
The learning outcomes were considered to have been achieved in 81% of cases.

A high number of students (81%) would recommend this unit to other students, indicating a positive overall experience.

In summary, the survey results reflected a positive response from the students to various aspects of the course, such as engagement, course content, lecture quality, support, and assessment fairness. The high percentages of agreement suggest that the course was well-received and effective in its delivery and structure.

Biography

Dr. Staniek obtained her PhD in Agricultural Sciences in the field of Food Technology and Nutrition at the Poznań University of Life Sciences (PULS), Poland in 2008 and her postdoctoral degree in 2019. Currently, she is employed at the Department of Human Nutrition and Dietetics (Bromatology and Food Toxicology Team) as a researcher and lecturer at the same institution. She is co-author of 75 publications, 35 of which are in the JCR database. Her research interests include mineral metabolism in metabolic disorders and the use of health-promoting properties of bioactive food ingredients in vitro and in vivo models.

Staniek Halina*, Krejpcio Zbigniew

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The effect of Cr(III) supplementation combined with diversified Zn content in the diet on the iron status in Wistar rats

Zinc dyshomeostasis is a common phenomenon that is observed in individuals, especially in diabetic patients. Trace elements like Cr(III) Zn and Fe regulate the body's insulin sensitivity and play an important role in maintaining blood glucose homeostasis, lipid metabolism, oxidative stress, and inflammatory response through multiple mechanisms.

Chromium(III), zinc and iron may inhibit each other's absorption and transport to the tissues and affect excretion. Therefore, the interaction between Cr(III) and Zn may have a significant impact on the iron saturation status. This can lead to iron metabolism disorders, such as iron deficiency and anemia etc.

The aim of the study was to investigate the effect of chromium(III) supplementation in combination with diversified Zn content in the diet on the tissular Fe levels in healthy Wistar rats (female and male). The model studies were carried out on 69 (36♀+33♂) Wistar rats, which were randomly assigned to 6 experimental groups (6 females and 5-6 males) and then fed the test diets ad libitum for 6 weeks.

The control groups (C) were fed a semi-synthetic AIN-93 diet containing the recommended levels of Zn (35 mg/kg) and Cr(III) (1 mg/kg) for rodents. The other groups received AIN-93 diets modified for Zn(II) content (D-Zn deficiency-5% RDA, OS-Zn oversupply-500% RDA). At the same time, the diets were supplemented with Cr(III) at doses of 1 and 50 mg/kg. The sources of Zn and Cr(III) in the diets were Zn(II) carbonate and Cr(III) propionate (Cr3), an organic complex of Cr(III) with propionic acid (CrProp), respectively. The study adhered to strict ethical standards for animal research and was approved by the Local Ethical Committee in Poznań, Poland. The Fe content of the collected organ samples (liver, kidney, spleen, heart) and tissues (bone) was determined by Atomic Absorption Spectrometry (AAS) after their prior mineralization with 65% nitric acid (V). Serum Fe concentration was determined by the colorimetric method using commercial kits (Roche Diagnostics, Germany).

It was found that both dietary Zn deficiency and excess increased liver Fe content in females. However, as dietary Zn levels increased, a decrease in spleen Fe accumulation was observed in male rats.

Cr(III) supplementation independently did not change the Fe content in the liver, kidney, heart, and femur, except for the Fe serum concentration in females and Fe spleen content in male rats. Dietary Cr(III) supplementation at a dose of 50 mg/kg of diet decreased the serum Fe concentration in females and increased Fe splenic accumulation in male rats.

A significant combined effect of the factors was also observed on the Fe content of the liver (female and male) and spleen (only male significant effect) of rats.

The research demonstrated that the diversified Zn content in the diet, individually and in combination with Cr(III) supplementation affected the tissue distribution of iron in healthy rats.

Keywords: Chromium(III), Zinc, Deficiency, Supplementation, Iron, Rats.

Biography

Dr. Staniek obtained her PhD in Agricultural Sciences in the field of Food Technology and Nutrition at the Poznań University of Life Sciences (PULS), Poland in 2008 and her postdoctoral degree in 2019. Currently, she is employed at the Department of Human Nutrition and Dietetics (Bromatology and Food Toxicology Team) as a researcher and lecturer at the same institution. She is co-author of 75 publications, 35 of which are in the JCR database. Her research interests include mineral metabolism in metabolic disorders and the use of health-promoting properties of bioactive food ingredients in vitro and in vivo models.

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Optimization of radio-analytical method for ^{3}H radioactive contamination in marine products

Recently, the interest in radioactivity has increased significantly in relation to the domestic and international issue such as discharges of radioactive waste water from the Fukushima nuclear power plant into the ocean. The Ministry of Food and Drug Safety (MFDS) has established analytical methods for ^{134}Cs, ^{137}Cs, ^{131}I, ^{238}Pu, ^{239}Pu, ^{240}Pu and ^{90}Sr in order to monitor imported foods and strengthen the management of radioactivity in foods. However, the analytical method for total ^{3}H (TFWT, HTO and OBT), one of the radioactive isotopes generated by nuclear facilities and nuclear material exposure accidents, was absent. Therefore, government ministries are extending the monitoring of radioactivity in the marine products. In this study, we tried to development an analytical method for total 3H, analysis applicable to marine products. In order to analyze ^{3}H in the marine products, the sample was mixed with scintillation cocktail (Gold Star) in a scintillation vial after pre-treatment procedures such as homogenization, combustion, distillation (sub-boiling), and then, measured using a Liquid Scintillation Counter (LSC) after placed in the dark and cool tray of LSC during at least 300 min. The weight of fresh sample such as flatfish, salmon, scallop and etc., homogenized was 10 g, the ^{3}H of fresh sample was collected in the 9 mL of 0.1 MHNO_3 by combustion. The combustion gases were air and oxygen, and oxygen gas was automatically supplied when the sample-zone furnace temperature reaches 500℃. The catalyst was Pt-alumina. Distillation time was over 150 min and the ratio of the sample and the scintillation cocktail was 9:11. The measuring time of LSC was over 240 min and the MDA was below 10 Bq/kg. The LSC condition for radio-analysis of ^{3}H in the marine products were as follows; the instrument was Hidex-300SL (Oy, Finland), external standard source was EU-152, the window channel was 10-150, coincidence time was 20 ns, counting time was 3600 sec, vial repeat was 4 times.

Biography

Taehyun Ahn studied Food science at the Graduate School of Chung-Ang University in Korea and received PhD degree in 1999. She then joined the research group of Prof. G. Paliyath at the Dept. of Food Science & Plant Agriculture, University of Guelph in Canada as a postdoctoral research associate until 2004. She has been working at Ministry of Food and Drug Safety in Korea as a scientific researcher since 2006. She researches on the development of analytical method and risk assessment for the contaminants in foods such as heavy metals, radionuclides and so on.

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Identification of Kunitz-free soybean lines by the application of different marker types

The primary protease inhibitors in soybean, Kunitz Trypsin Inhibitor (KTI) and Bowman-Birk Inhibitor (BBI), account for at least 6% of the protein in soybean seeds. Trypsin Inhibitors (TI) are responsible for the reduced digestibility of seed proteins, making them the major anti-nutritional components in soybeans. Conventional soybean varieties require heat processing to deactivate the activity of trypsin inhibitors before being used as animal feed. The breeding program at the Maize Research Institute Zemun Polje has made significant progress in lowering the TI activity in soybean grain by developing a promising breeding lines from the crosses of standard high-yielding varieties with a donor parent lacking KTI. Marker-Assisted Selection (MAS) appeared to be an efficient tool for speeding up the selection for KTI-free lines, allowing for identification of desirable plants in early generations with a minimum quantity of plant tissue and without losing valuable seed samples. Identification of KTI-free lines in segregating generations is performed by the application of two molecular markers proposed to be tightly linked to KTI locus–Satt228 and Satt409. The segregation ratio for the presence or absence of KTI among breeding lines was 3:1, as it was expected for the monogenic trait controlled by a single locus. Both markers yielded the identical results regarding the DNA profiles of the examined soybean lines, indicating their reliability for the early-generation selection of KTI-free lines. Results generated from SSR analysis were validated by the acrylamide Sodium Dodecyl Sulphate Polyacrylamide Gel Electrophoresis (SDS-PAGE). There was a strong correlation between the protein band for Kunitz trypsin inhibitor protein at the position of 21,5 kDa and the Satt228 and Satt409 marker's banding pattern. Therefore, those two markers can be strongly proposed for the application in MAS for low KTI in soybean grain. Soybean varieties with reduced protease inhibitor content could reduce or eliminate the need for expensive and time-consuming heat treatments and minimise the possibility of a decrease in soybean seed protein solubility and essential amino acid availability.

Biography

Vesna Peric Current position as the Head of Soybean Breeding Group at the Maize Research Institute Zemun Polje (Senior Research Associate), PhD in Biotechnical Sciences. Her Research topics on soybean genetics and breeding, development of soybean cultivars of standard grain type and cultivars with improved nutritional value. Her work also includes marker assisted selection and diveristy studies. Vesna Peric has published over 170 articles and abstracts, including 14 articles in peer-reviewed international journals. She is a co-author of 8 registered soybean varieies, four commercialized at national level, and one soybean variety commercialized at international level.

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Effect of continuous/discontinuous vacuum distillation during fermentation on the volatiles and sensory profiles of unfiltered and unpasteurized Low Alcoholic Beers (LAB)

Low-Alcoholic Beer (LAB) and Non-Alcoholic Beer (NAB) have gained market share and show increasing sales. A pilot scale under-vacuum fermenter/distiller was used to produce unfiltered and unpasteurized LAB, with a high-temperature fermenting yeast to allow under-vacuum alcohol distillation at 40°C and negative pressure of 0.8 bar. The tests were carried out in 9 hours, on continuous and discontinuous fermentation/distillation processes starting at 5 hours post yeast inoculum, evaluating volatile composition and alcohol content at different stages. To improve the LAB aroma and flavor profile after the loss of volatiles in distillation, the green beer was subjected to cold maturation (4°C) and flavored with an LAB-specific hop-derived flavoring product. A trained panel test tasted the LAB for the sensorial evaluation. The results show significant differences among the “green beer” obtained with continuous and discontinuous tests. At the end of fermentation/distillation the alcohol content was lower for the continuous tests while for discontinuous ones the volatiles profile showed higher levels of aldehydes and vicinal diketones. The levels of higher alcohol were similar among the samples. After the cold maturation and aromatization, the beer's volatile profiles were obtained for aldehydes, vicinal diketones, higher alcohols, esters, and hop-derived aromatic compounds. An aromatic strong hop character characterized the beers probably because of the reduced masking effect due to the removal of the other volatiles during distillation. Further research will be needed to investigate LAB stability during storage. This research project was carried out with the financial support of the National Recovery and Resilience Plan (NRRP), Research Projects Of National Interest (PRIN) 2022, funded by the European Union – NextGenerationEU, Cod. Prog.: P2022JEFNF CUP: J53D23018340001.

Biography

Dr. Alfeo studied Agriculture, food, and forest sciences at Palermo University, Italy, and graduated as MS in 2013. He then joined the research group of Prof. Aldo Todaro at the Food Science and technologies lab, of the University of Palermo, Italy. In 2018, he received his Ph.D. in food science and technology at the same institution. After six months of postdoctoral fellowship supervised by Prof. Rosa Palmeri at the University of Catania, Italy, in 2019 he joined the research group of Prof. Ombretta Marconi at the Italian Brewing Research Centre, University of Perugia. He has published 25 research articles in SCI(E) journals.

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Lycopene alleviates fumonisin B1-induced chicken hepatocyte PANoptosis by regulating SIRT1-mediated mitophagy

Mycotoxin contamination is a universal agricultural problem and a critical health issue. Fumonisin B1 (FB1) is a kind of the most toxic and extensive fumonisins that exists in various products and foods. Lycopene (LYC) as a natural carotenoid is becoming increasingly favored owing to its oxidation resistance. Mitophagy is a form of selective autophagy triggered by mitochondrial depolarization to remove damaged mitochondria. PANoptosis is a novel concept in the field of cell death, where pyroptosis, apoptosis, and necroptosis simultaneously occur. Here, we aim to explore the mechanism of FB1-induced hepatotoxicity and antagonism of LYC. How FB1 causes liver damage and the role of LYC in it have remained unclear. Here, we aim to explore the mechanism of FB1-induced hepatotoxicity and antagonism of LYC. In this study, we used chicken hepatocytes for in vitro experiments. Our findings indicated that LYC mitigated FB1-induced mitochondrial structure damage and loss of mitochondrial function, reducing apoptosis and oxidative injury in chicken hepatocyte. Furthermore, LYC reduced the expression of PANoptosis-related signal molecules that FB1-upregulated. LYC relieved FB1-induced reduction in SIRT1 and Ac-FOXO1 protein expression, which then facilitated mitophagy effects of engulfing and clearing damaged mitochondria. Most importantly, SIRT1 knockdown inhibited the protective effects of LYC in FB1-induced mitochondrial damage and PANopotisis. There, LYC alleviated FB1-induced chicken hepatocyte PANoptosis by regulating SIRT1-mediated mitophagy. Our study suggested that LYC targeted the SIRT1, alleviating FB1-induced mitophagy decline involving FOXO1-mediated mitophagy, which in turn inhibited the occurrence of PANoptosis in chicken hepatocytes. The findings showed the modulation of SIRT1, expounding the function of SIRT1-FOXO1 axis-mediated mitophagy in chicken hepatocyte injury. More importantly, this study presents a crucial insight into SIRT1 can serve as a target for regulating mycotoxins-induced chicken hepatocyte impairment.

Biography

Dr. Zhao graduated from Northeast Agricultural University with a bachelor's degree in Veterinary Medicine in 2017. He then joined the research group of Prof. Jin-Long Li at the Clinical Veterinary Medicine, Northeast Agricultural University. He received his PhD degree and an Associate Professor position in 2022 at the same institution. He has published more than 30 research articles in SCI (E) journals at first or corresponding author in prestigious international journals, including Journal of Hazardous Materials, Redox Biology, and Journal of Advanced Research.

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The research on *Lactobacillus reuteri* ZY15 in improving intestinal inflammation in offspring within a mother-piglet model

Weaning stress triggers inflammatory diarrhea in piglets, presenting a substantial challenge to the growth performance and mortality rate of piglets. Consequently, the mother-piglet relationship serves as an ideal model for mother-offspring research. Based on the differences in gut microbiota between weaned healthy and diarrheal piglets, functional bacterial communities, such as *Bifidobacterium, Lactobacillus*, *Limosilactobacillus, Prevotella, Mitsuokella, Megasphaera, Acidaminococcus*, were cultured using the external simulation culture technique. Subsequently, *Lactobacillus reuteri* ZY15 was isolated from the in vitro culture system by means of culture omics technology. In vitro evaluation indicated that *L. reuteri* ZY15 exhibited excellent properties in terms of acid resistance, bile salt tolerance, adhesion to Caco-2 and IPEC-J2 cells, and inhibition of the growth of E. coli K88, Staphylococcus aureus, and Salmonella. Twenty healthy sows in late gestation (14 days prior to farrowing) with similar body weights were randomly assigned to two groups: a control group (CS) fed a basal diet and a treatment group (LS) fed a basal diet supplemented with *L. reuteri* ZY15. After farrowing, the piglets from both groups were further divided into two subgroups: One subgroup was gavaged with *L. reuteri* ZY15 daily until weaning at 21 days (LP group), and the other subgroup received physiological saline (CP group). Sows fed *L. reuteri* ZY15 exhibited a significant increase of over 10% in the birth weight and weanling weight of piglets. Moreover, when sows were fed with *L. reuteri* ZY15 and Piglets were gavaged with *L. reuteri* ZY15, there were significant improvements in intestinal inflammation and cell apoptosis of weaned piglets. Combined with transcriptome analysis, it was demonstrated that *L. reuteri* ZY15 alleviated intestinal inflammation via the Akt/mTOR/HIF-1α/RORγt/IL-17 pathway in an ETEC K88-challenge miouse model. Non-targeted metabolomics revealed that sows fed with *L. reuteri* ZY15 significantly altered the lysophospholipids metabolism in cord blood and breast milk. These may be the key maternal metabolites that alleviated intestinal inflammation. Sows fed *L. reuteri* ZY15 restructured the gut microbial community in piglets. Specifically, this led to an increase in the relative abundances of *Lactobacillus* and *Treponema*, while reducing the relative abundances of *Phascolarctobacterium.* In addition, it significantly modified the transfer of passive immunity (immunoglobulin A, M and G) from mother to offspring. This, in turn, reshaped the gut bacterial community of piglets and thus alleviated weanling stress in these piglets. Taken together, our

findings uncovered the protective mechanism of *L. reuteri* ZY15 in piglets and the key maternal metabolites. The corresponding results provided a theoretical foundation for the mother-offspring integration research and its nutritional regulation strategies.

Biography

Dr. Yunsheng Han studied Zootechny at the Lanzhou University and Institute of Animal Sciences of Chinese Academy of Agricultural Science, China and received his PhD degree in 2021. He then joined the feed resources and biotransformation innovation team of Prof. Peilong Yang at Institute of Feed Research of Chinese Academy of Agricultural Sciences. After one year he obtained the position of a Research Assistant at the same institution. He mainly engaged in research on the gut microbiota in animals and nutritional regulation technologies. She has published more than 10 research articles in SCI (E) journals and obtained 3 national patents.

Yuri Masuda
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Effect of extraction temperature on the antioxidant activity of aqueous extracts from lotus root and white radish

Antioxidants' anti-inflammatory and anti-ageing effects on our bodies provide several health benefits. However, the human body naturally produces only a small concentration of antioxidants, requiring us to rely heavily on external sources. White radish (*Raphanus sativus var. Longipinnatus*) and lotus root (*Nelumbo nucifera*) are known as rich sources of antioxidants. Despite their popularity, optimum temperatures to maximise antioxidant extraction from simmering, a common cooking method, are understudied. This work details how antioxidant activities in aqueous solutions from the two vegetables at different extraction temperatures (0℃,25℃,50℃,75℃,100℃) were measured. Mixtures of standardised mass-to-volume ratios of shaved vegetables and distilled water were made, then left at respective temperatures for 1 hour. 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay and Folin-Ciocalteu assay were then performed to quantify antioxidant activities through the inhibition rate (%) and total phenol contents, respectively. In both white radish and lotus root extracts, the antioxidant activities increased with rising temperature. The optimal temperature for antioxidant activity in white radish extract was at 50℃, while optimal antioxidant activity was at 100℃ in lotus root extracts. Past the peak temperatures, a decrease in antioxidant activities was observed, likely due to thermal degradation of antioxidants. The difference in the optimal temperatures results from the lower thermal stability of antioxidants in white radish compared to the antioxidants in the lotus roots. Overall, this work demonstrated potential application in households to obtain antioxidants from an everyday diet efficiently.

Biography

Yuri completed the International Baccalaureate Diploma Program at Anglo-Chinese School (International), Singapore, graduating in November 2024. She will begin her undergraduate studies in Biomedical Sciences at University College London in the fall of 2025. Currently, she is interning in a research group at the Goda Laboratory in the Department of Chemistry, University of Tokyo.

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Evaluation of antidiabetic potential of macrofungi extracts from *Hericium erinaceus, Ganoderma lucidum, Coprinus Comatus* by in vitro assay

Mushrooms produce plethora of bioactive molecules with health-promoting and therapeutic properties. Among a number of specious of mushrooms, particular attention has been focused on *Hericium Erinaceus (HE), Ganoderma Lucidum (GL) and Coprinus Comatus (CC)*. The fruiting bodies of these mushrooms contain a plethora of bioactive compounds, depending of the species. HE extracts exert anti-hypertensive, anti-hyperlipidaemic, anti-senescence, antibiotic, anti-carcinogenic, anti-diabetic, anti-fatigue, cardioprotective, hepatoprotective, nephroprotective, and neuroprotective properties, as well as improvement of anxiety, cognitive functions, and depression. GL extracts give a wide range of pharmacological effects, such as anti-tumour, immunomodulation, hepatoprotective, antioxidants, antimicrobial, anti-diabetes, cardioprotective, anti-inflammatory, antimutagenic, neuroprotective activities. CL extracts have health-promoting properties: Antioxidant, anticancer, antiandrogenic, hepatoprotective, acetylcholinesterase, inhibitory, anti-inflammatory,antidiabetic, anti-obesity, antimicrobial, antiviral, antifungal, and antinematode activity.

This study aimed to evaluate the antidiabetic activity of mushroom extracts in terms of α-glucosidase inhibition using the spectrophotometric method. The results were compered with the inhibitory potential of Acarbose (Ac) at relevant concentrations. It was found that the highest antidiabetic potential through the mechanism of α-glucosidase Inhibition (I) showed GL extract (MetOH/water) at concentration of 5.0% (w.w.)-99.46% I, followed by GL extract (water after acid-base hydrolysis)–39.25% I, and HE extract (MetOH/water)–14.88% I; in comparison with Ac at 5%-86.84% I.

It is concluded that depending on the type of mushroom, its extraction method, and concentration, these mushrooms have significant antidiabetic potential through the mechanism of α-glucosidase inhibition that can be used for supporting glucose management in diabetes. However this observation warrants further confirmation in clinical trials.

Biography

Zbigniew Krejpcio graduated from chemistry (Poznan University of Technology, Poland), (1985), received honors and academic positions (Ph.D. food technology and nutrition 1994, habilitation 2023, professor 2011). He is a leader of the Food Toxicology and Bromatology Group (Department of Human Nutrition and Dietetics, Poznan University of Life Sciences). He was a post doc at the University of British Columbia, Vancouver, Canada (1997), Fulbright Scholar at the University of Alabama at Tuscaloosa, USA (2018-2019), trainings (i.e. UK, Belgium, Italy, Netherlands), supervisor of 4 Ph.D. over 100 MS theses, involved in several international (EU) and national projects, published over 200 research articles.

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Evaluation of standardized ileal digestibility of amino acids in corn, barley, wheat bran fed to primiparous sows during gestation, lactation, and post-weaning period

This study determined the apparent ileal digestibility (AID) and standardized ileal digestibility (SID) of Crude Protein (CP) and Amino Acids (AA) of corn, barley, and wheat bran in primiparous sows. Four physiological stages of primiparous sows were examined: a gestation stage where sows were restricted-fed, a lactation stage where sows were fed ad libitum, and then two post-weaning stages, an ad libitum fed phase followed by a restricted-fed phase. A total of 8 primiparous sows fitted with T-cannulas in the distal ileum were assigned to an 8×3 Youden square design with four diets (corn, barley, wheat bran, and Nitrogen (N)-free diet) and three periods, resulting in a total of six replicates per treatment. The basal endogenous losses of CP and AA were determined after feeding an N-free diet. For barley, the AID of His, Ile, Lys, and Thr was higher in gestating sows compared to restricted-fed post-weaning sows. For wheat bran, the AID of Ile, Leu, Thr, Val, Ala, Asp, Glu, Gly, Ser, and Tyr was higher in lactating sows compared to gestating sows ($P<0.05$). For corn, the AID of CP and most AA did not differ across physiological states. Regarding the SID of barley in gestating sows, only the SID of His was higher than in lactating sows and restricted-fed post-weaning sows ($P<0.01$), and the SID of Gly was higher than in lactating sows ($P<0.05$). For wheat bran, the SID of Glu, Ser, and Tyr in gestating sows was lower than in lactating sows ($P<0.01$). The SID of Val and Tyr in lactating sows was higher than in ad libitum access post-weaning sows ($P<0.05$). For corn, the SID of Lys, Ala, and Gly in gestating sows was higher than in lactating sows ($P<0.05$). The SID of Ile, Lys, Phe, Thr, and Ala in gestating sows was higher than in ad libitum post-weaning sows ($P<0.05$). The findings indicate that similar SID values are found for barley in different physiological stages of primiparous sows under the same diet and feed regime, whether ad libitum or restricted. However, for wheat bran, which has a high fiber content, lactating sows exhibited higher AID values and SID values compared to gestating sows for part of AA. For corn, which has a low fiber content, gestating sows exhibited higher SID values compared to lactating sows and ad libitum post-weaning sows.

Biography

Zixi Wei is a fourth-year PhD candidate at Gembloux Agro-Bio Tech, University of Liège (Belgium), jointly trained with the Institute of Feed Research, Chinese Academy of Agricultural Sciences (CAAS). He received his master's degree from the Institute of Feed Research, CAAS. His research mainly focuses on swine nutrition, with particular interest in nutrient metabolism and gut health in pigs.

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