magnus Group

Joint Event

6th Edition of Euro-Global Conference on

FOOD SCIENCE AND TECHNOLOGY&

6th Edition of the International

NUTRITION RESEARCH CONFERENCE

16-18 September

Rome, Italy

CPD ACCREDITED

THE CPD GROUP

APPROVED PROVIDER

#780643

Verify @ https://thecpdregister.com

Venue: NH Villa Carpegna, Via Pio IV, 6, 00165 Roma RM, Italy

BOOK OF ABSTRACTS

SEPT

16-18

Joint Event

6th Edition of Euro-Global Conference on

Food Science and Technology &

6th Edition of the International

Nutrition Research Conference

BOOK OF

ABSTRACTS

INDEX	Page No

Keynote Speakers

Angelo Michele Carella
Internal Medicine Department of "T. Masselli-Mascia" Hospital, Italy

Holly Gatzke
University of Nevada, Reno, United States

Kasiviswanathan Muthukumarappan
South Dakota State University, United States

Lars Thore Fadnes
University of Bergen, Norway

Malgorzata Mizgier
Poznan University of Physical Education, Poland

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

Paolo Lucci
Polytechnic University of Marche, Italy

Raffaella Conversano
University of Bari, Italy

Robert Mancini
Kansas State University, Canada

Shashi Bhushan Vemuri
Food Hygiene Bureau of Jamaica, Jamaica

Surendra Singh
Banaras Hindu University, India

Suriyavathana Muthukrishnan
Periyar University, India

Vintila Iuliana
University "Dunarea de Jos" Galati, Romania

Yasin Ozdemir
Ataturk Horticultural Central Research Institute, Turkey

Thank You All...

Speakers

Aboubacar Oumar Bangoura
Université Gamal Abdel Nasser de Conakry, Guinea

Agnieszka Palka
Gdynia Maritime University, Poland

Ahmed Sheku Dabo
National Pingtung University of Science and Technology, Taiwan

Aleksandra Wilczynska
Gdynia Maritime University, Poland

Alouache Amel
ENSV Ecole Nationale Superieure Vétérinaire-El Alia-Rue Issad Abbes El Alia-Algiers, Algeria

Anin Louise Anin Atchibri
Nangui Abrogoua University, Cote d'Ivoire

Arby Aminata Diallo
Agence Nationale de la Sécurité Sanitaire des Aliments, Mali

Ashish Sinha
Pt JNM Medical College, India

Babak Ghajavand
Linköping University Hospital, Sweden

Christian Turra
Self-Employed Researcher, Brazil

D Esposito Lourdes
Alimentos y Tecnología Médica, Argentina

Danielle Christelle Tinak Ekom
Institute of Agricultural Research for Development (IRAD), Cameroon

Davide Frumento
Università degli Studi di Genova, Italy

Diana Catalina Castro Rodraguez
National Institute of Medical Sciences and Nutrition Salvador Zubiran, Mexico

Dominique Rinaldo
INRAE Centre Antilles Guyane, Guadeloupe

Federico Bianchi
University of Verona, Italy

Garofalo Luciana
Alimentos y Tecnología Médica, Argentina

Haider Al Lawati
Sultan Qaboos University, Oman

Halima Oumarou Diadie
Abdou Moumouni University of Niamey, Niger

Hanaa Amiirah Sohawon-Soreefan
Private Practice, Mauritius

Hema Kesa
University of Johannesburg, South Africa

Hemavathy Subramaiam
International Medical University (IMU), Malaysia

Iftikhar Ali Khan
Easternalong Pharmaceutical Co., Ltd, China

Ivana Sarac
University of Belgrade, Serbia

Jacqueline Namusalisi
Sasakawa Africa Association, Uganda

Jamal Ayour
Ibn Zohr University, Morocco

Speakers

Jan Olof Drangert
Linkoping University, Sweden

Jeffrey Anshel
Corporate Vision Consulting, United States

Joanna Newerli-Guz
Gdynia Maritime University, Poland

Kamil Makosza
Medical University of Silesia in Katowice, Poland

Laia Martí Melero
AB Biotek Human Nutrition & Health, Spain

Laribi -Habchi Hassiba
University of SAAD Dahlab Blida 1, Algeria

Laura Thedy
Institut Agricole Régional, Italy

Luca Vernetti-Prot
Institut Agricole Régional, Italy

Malgorzata Mizgier
Poznan University of Physical Education, Poland

Maria Concetta Scuto
University of Catania, Italy

Martino Laurenzi
CeSEG Centro Studi Epidemiologici di Gubbio, Italy

Maryam Mousivand
Agricultural Biotechnology Research Institute of Iran, Iran

Mathieu Merlet
Institut Agricole Régional, Italy

Maurizio Binacchi
University of Rome, Italy

Most Tahera Naznin
University of Nevada, United States

Nashi Khalid Alqahtani
King Faisal University, Saudi Arabia

Ngono Mballa Epse Abondo
University of Yaoundé 1, Cameroon

Ngozi Arisa
Bells University of Technology Ota, Nigeria

Nkereuwem Sunday Etukudoh
Federal College of Medical Laboratory Science and Technology, Nigeria

Norma Angélica Santiesteban López
Universidad Autonoma de Puebla, Mexico

Ould Brahim Insaf
University of Science and Technology Houari Boumediene, Algeria

Pandey Kavita Rajesh
University of Mumbai, India

Paulina Średnicka
Prof. Waclaw Dabrowski Institute of Agricultural and Food Biotechnology - State Research Institute, Poland

Philippe Sessou
University of Abomey-Calavi, Benin

Raghvendra KV
Juggat Pharma, India

Speakers

Rita Pramotton
Institut Agricole Régional, Italy

Rubrinder Singh Sandhu
Ch. Devi Lal State Institute of Engineering & Technology (CDLSIET), India

Sabina Valentini
Institut Agricole Régional, Italy

Salifou Chakirath Folake Arike
University of Abomey-Calavi, Benin

Seif Eldin Abdel Rahman Mohammed
National Center for Research, Sudan

Shireen Punjabi
Texas A&M School of Medicine, United States

Tania Flutto
Institut Agricole Régional, Italy

Teresa Gladys Cerón Carrillo
Universidad Autonoma de Puebla, Mexico

Tim Ambler
London Business School, United Kingdom

Tougan Polycarpe Ulbad
University of Parakou, Benin

Veerle Vanheusden
Directorate General Health and Food Safety, Belgium

Vidhan Chandra Roy
Juggat Pharma, India

Weina Liu
East China Normal University, China

Thank You All...

Welcome Message

Dr. Kasiviswanathan Muthukumarappan

South Dakota State University, United States of America

Dear Conference Attendees,

It gives me great pleasure to welcome each one of you here today at FAT 2024. 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 Effectiveness of atmospheric cold plasma in inactivating microorganisms. 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.

Welcome Message

Angelo Michele Carella, M.D.

Internal Medicine Department of T. Masselli-Mascia Hospital, Italy

Dear Colleagues and Conference Attendees,

Thank you for your interest in the 6th Edition of the International Nutrition Research Conference (Nutrition 2024). It is a great honor and pleasure to write this welcome message to Congress visitors; I am sure that it will be an event of high scientific relevance as well as a great opportunity to interact and share your research with experts involved in Nutrition fields from all over the globe. The Congress Sessions include a lot of topics thet reiterate the paramount importance of nutrition in our lives and in daily clinical practice, as Diet-Related Disorders, Obesity and Weight Management, Malnutrition, Effect of Nutrition on health and disease and many others.

I cordially greet you, hoping to meet you all in Rome next September.

Welcome Message

Prof. Dr. Raffaella Conversano

I.C. "Giovanni XXIII-Pascoli", Fasano (BR), Italy, Adjunct Professor Laboratory of Special Needs Education, For.Psi.Com., University of Bari, Italy, UTL University of free time "San Francesco D'Assisi" Fasano (BR) -Puglia, Italy

Dear congress participants, it is an honour and a pleasure to welcome you with some notes for the 6th Edition of Euro-Global Conference on Food Science and Technology (FAT-2024) which is being organized from September 16-18, 2024 at Rome, Italy . Current developments in science and technology, in all their various shades of investigation, applied to the food sector outline a new and interesting vision of man, of his essence, of the satisfaction of his primary needs and of his being a citizen of the world from a modern point of view. Food is history, religion, belonging, communication and it is precisely in this perspective that the focus of the conference Food: focusing on exceptional discoveries in Food Science and Technology is oriented. However, while advances in productivity and technology have significantly improved the use of natural resources and food security, at the same time the latter must face, ever more rapidly, the threats due to climate change, the escalation of natural disasters that continuously change our lands, and the proliferation of parasites. Moreover, food has now become too refined due to cultivation methods and commercial choices for its production and consequently the man is no longer seen as a human being but as a stomach to be filled. This opens up new opportunities to adapt modern breeds to changes in order to achieve greater productivity and introduce intelligent and differentiated methods to adapt food and its primary intentional concept of nutrition, intended both as physical nourishment and above all as spiritual one, to man in the most functional way possible. It is not a coincidence that the food industry, as a hub of research and development, holds the key to addressing these comparisons where the integration of all sectors is essential to devise new challenges of competitive solutions so as to improve the industry. Being human is an exhausting effort and it is fundamental for the success of this way of being. It is necessary to set the goal of promoting a metamorphosis of thought, a physiological transformation that is also a true change of attitudes through the construction of paths aimed at promoting the food process, as the most suitable place for growth for all the actors involved. The narrative and functional vision based on the individual and the interpretation of his needs will be the future basis for success. There is only one good, knowledge, and one evil, ignorance. (Socrates). If man survives, everything will depend on how and how much he will have learned to learn, to communicate but, above all, to know how to eat!

Welcome Message

Małgorzata Mizgier

Poznan University of Physical Education, Poland

Dear Sirs and Madams,

On behalf of the Organising Committee, I would like to welcome you very warmly and invite you to take part in the Nutrition 2024 Conference, which will be held in Rome from 16 to 18 September. The topic of the conference concerns nutrition, food and dietetics in a broad sense. Dietetics is a rapidly evolving area of science, where both new scientific studies on nutrition in prevention and studies exploring further possibilities of applying diets in treating many diseases, such as diabetes, obesity, cancer, cardiovascular diseases, and others, are regularly emerging. Dietetics is also knowledge about raw materials from which dishes are prepared–about their biochemical composition, nutritional value and energy, as well as their possible interactions with medicines and dietary supplements. Dietetics is therefore an interdisciplinary science that provides a broad knowledge about food, human nutrition and the effects that we can expect in relation to the application of the diet.

Welcome Message

Prof. Paolo Lucci

Department of Agricultural, Food and Environmental Sciences,
Università Politecnica delle Marche, Italy

Dear Conference Attendees,

It is an honor and great pleasure to write a few welcome notes for the prestigious Hybrid Event – the 6th Edition of Euro-Global Conference on Food Science and Technology (FAT 2024), under the theme FOOD: Focusing On Outstanding Discoveries in Food Science and Technology. Nowadays, there is an urgent need for effective and sustainable strategies aimed at ensuring both global food security and safety while reducing vulnerability of human and natural systems. As a result, significant efforts have been made by both industry and academia to find possible solutions for this complex issue. The FAT 2024 program will cover a broad spectrum of timely topics in the fields of Food Science, ranging from the application of emerging technologies to the strategies able to improve sustainability, safety, and health benefits of foods. In line with this, the conference will offer a variety of research topics including:

(1) Current Trends in Food Technology

(2) Food Safety and Standards

(3) Food, Nutrition and Health

(4) Food Security and Global Concerns

(5) Food and Resource Economics and

(6) Food Consumer Science, among others

It will be a great opportunity for the FAT 2024 participants including young and senior researchers, scientists, and academicians to gain knowledge with the up-to-date research in new healthy and sustainable food products and processes.

Welcome Message

Associate Professor PhD Iuliana Vintila

Co-Chair Global Harmonization Initiative Nutrition WG

Keynote Speaker Session Nutrition and Food Science Research

Chair of Nutrition & Sustainable Diets Scientific Nutrition 2024 Conference Session

Dear congress participants of the Nutrition 2024 Conference, in this current global vortex of changes with impact on our personal and professional life, four fundamental pillars remain as references: life security, food safety, good nutrition and balanced lifestyle.

In this context, I have the pleasure to invite in the audience of my Keynote Presentation entitled Harmonization Principles of Food Eco Labeling and Nutrition Claims Labelling. I intend to conduct the presentation axed on one of my original proposal: The science-based solution that the author propose to be used in the harmonised menu nutrition labelling is the personalized nutrition assessment of the daily nutrients intake correlated with using the menu composition information's declared on the nutrition label, as single solution to correct individual, groups and social communities nutrition. Harmonization of key science-based solutions could be implemented by the academia in collaboration with the standardisation association, integrating the society needs and considering implementation power of the foodservices units.

As Chair of Nutrition WG from The Global Harmonization Initiative (GHIWGN), I invite you to be part of our organization which could be considered as an impartial stakeholder regarding the food legislation harmonization process, at the EU and international level. The GHIWGN, one of the organization's 16 working groups, provide independently its expertise regarding global nutrition labelling and food health claims.

Welcome Message

Prof. Dr. Maria Jesus Villasenor Llerena

University Of Castilla-La Mancha, Spain

Dear Colleagues, friends, and attendees, it is a huge pleasure to welcome all of you on behalf on behalf of the Scientific and Organizing Committees of the 6th Edition of Euro-Global Conference on Food Science and Technology (FAT-2024). We feel proud to have the chance to receive together internationally relevant scientists, young researchers, industry and government representatives, chemists, bio and food technologists, pharmacists, nutritionists, policymakers, as well as many other professionals working into the impressive Food Science and Technology's world through the diverse food, nutrition, and wellness industries topics. This opportunity will be a three-day hybrid event including oral and poster presentations, as well as debates and information exchanges on excitant areas such as Food Safety, Food Nanotechnology, Food Safety, Food adulteration and Quality Control of Food among other emerging technological and scientific topics where to share meaningful innovations. We sincerely hope you find a great opportunity to promote and learn knowledges from all the involved sectors in this challenging Food and Technology field. We wish you a great experience in the congress!

Welcome Message

Prof. Dr. Roberta Fusco

Messina, Italy

Dear congress visitors, it is my pleasure to speak few words on welcoming the delegates of Nutrition 2024. Nutrition is an indispensable element for the continuation of life in biological organisms, albeit in different ways and through various mechanisms. In this conference, our aim is to encourage the discussion and gain valuable knowledge on a broad range of nutritional issue such as Food and energy storage, coexisting malnutrition situation, emerging, prevalence of nutrition related chronic disease and aging of societies etc. In this Nutrition 2024 meet, globally famous Scientist and Technologists in several branches of Food Science and Technology are delivering talks, youngsters are speaking. I whole heartedly welcome all of them, on my behalf as well as from the members of Organizing Committee of this Meet. I wish for all the good success for these days deliberations.

Welcome Message

Dr. Yasin Ozdemir

Yalova, Türkiye

Dear participants, welcome to Nutrition 2024. It is an honor to be with you and be a part of this conference. Watching researchers' presentations will provide significant professional benefits. This conference covers all nutrition-related sub-branches. I hope this conference will be successful and provide significant contributions to the sector. Presenting new nutritional research results will expand the vision of the participants. Comprehensive coverage of nutrition and the presentation of many new research findings will provide benefits for both industrialists and academicians. Studies on many topics such as healthy nutrition, more nutritional processing of foods, protection from diseases, strengthening the immune system, bioaccessibility, malnutrition, nutrition education, diet-related disorders and nutritional biochemistry will be presented at this conference. I hope that this conference will lead to the establishment of new collaborations and the emergence of new ideas.

Welcome Message

Prof. Surendra Singh

Banaras Hindu University, Varanasi (India)

Dear Conference Attendees

It is an honor and great pleasure to write a few welcome notes for the session Food, nutrition and health. The science of food and nutrients and their action on our health is called nutrition. Nutrition and health are two sides of the same coin. They are, therefore, inseparable. Health depends to a large extent on nutrition and nutrition depends on food intake. The effective management of food intake and nutrition are both key to good health. The major food issues are insufficient imbalanced intake of food/nutrients. A major portion of the nutrients needed for food originate with the soil. Lack of adequate food and food of poor nutritional quality lead to greater extent of under-nutrition, which in turn causes ill health. A multi-disciplinary approach linking basic of soil available nutrients, food and human health are necessary to advance our understanding of nutrition to food and human health. The common nutritional problems of public health importance are

(i) Low birth weight

(ii) Protein energy malnutrition in children

(iii) Chronic energy deficiency in adults

(iv) Micronutrients malnutrition

(v) Nutritional deficiencies and

(vi) Diet related non communicable disease

It will be a great opportunity for the WOC participants including young and senior researcher, scientist and academicians to gain knowledge with up to date research in field of food, nutrition and health.

Welcome Message

Shashi Vemuri

Senior Advisor and Director Food Hygiene Bureau

Jamaica

Dear Conference Attendees,

It is an honor and great pleasure to write a few welcome notes for the 6th Edition of Euro-Global Conference on Food Science and Technology (FAT-2024) which is being organized from September 16-18, 2024 at Rome, Italy . Climate change has emerged as significant manmade global environmental challenge marked by rise in ambient temperature of the earth due to release of greenhouse gases in large proportion. Increase in global mean temperature of the earth is supposed to alter climatic patterns like floods, draughts, and incidents of the El-Nino and La-Nina, thereby affecting human life supporting system and global food production leading to food insecurity in terms of food availability, accessibility, utilization, and food system stability. Hence this topic on climate change impact on food security provides an insight into the climate change and its causes, impacts on agriculture, including the implications for food security, adaptation, and strategies for its mitigation.

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

APPROVED PROVIDER
#780643
Verify @ https://thecpdregister.com

Continuing Professional Development (CPD) credits are valuable for FAT 2024 & Nutrition 2024 attendees as they provide recognition and validation of their on-going 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 on-going 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 2024 & Nutrition 2024 and earning CPD credits can help attendees stay current with the latest developments and advancements in their field.

Networking opportunities: FAT 2024 & Nutrition 2024 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 33 CPD credits.

Table of Contents

BOOK OF ABSTRACTS

SEPT

16-18

Joint Event

6th Edition of Euro-Global Conference on

Food Science and Technology &

6th Edition of the International

Nutrition Research Conference

KEYNOTE FORUM

Autism spectrum disorder and nutrition

Autism Spectrum Disorder (ASD), also known as Autism, is a common, highly heritable and heterogeneous neurodevelopmental disorder that has underlying cognitive features and commonly co-occurs with other conditions. Traits may be detected in early childhood, but ASD is often diagnosed later.

ASD, more common in males than in females (ratio from 2:1 to 5:1), occurs in all racial, ethnic, and socioeconomic groups and data report it globally affects 52 million people (approximative prevalence of 1 in 132 individuals). ASD has unclear multifactorial etiology, although genetic/environmental interaction appears to be decisive. More than 100 genes and genomic regions have been confidently associated to ASD; main environmental factors related to ASD development are: neonatal hypoxia, gestational diabetes, preterm birth, valproate use during pregnancy, prenatal exposure to pesticides, inadequate intake of protective folic acid, maternal obesity, maternal age >40 and paternal age >50 years.

The ASD phenotype is defined, according to DSM-5 criteria, as a heterogeneous spectrum of persistent deficit in communication/social interaction and repetitive/stereotypic behaviors with sectoral interests/activities, variously combined and with variable expressivity.

ASD can affect nutritional status and increase the likelihood of developing eating problems; food selectivity is the most frequent feeding disorder, followed by picky eating up to food refusal. ARDIF, Anorexia/Bulimia, BED and PICA are typical DSM-5 eating disorders that can coexist with ASD. In these patients were found alterations in both Serotonin and Dopamine Systems; moreover, demodulations in both Gabaergic and Endocannabinoid systems and appetite hormones imbalances (Leptin, Adiponectin, Ghrelin) were also found. Finally, morpho-structural alterations in some brain regions involved in food intake regulation (Insula, Amygdala, Caudate nucleus) have been demonstrated in ASD patients.

Therefore, ASD may be associated with inadequate dietary intake; prevalence of obesity, overweight and underweight in children, adolescents and adults with ASD is higher, as well as incidence of Type 2 diabetes, developing diabetes risk and risks of dyslipidemia and heart disease. Some side effects, particularly hyporexia and/or increased hunger, of drugs predominantly used in ASD (Risperidone, Aripiprazole, Methylphenidate, Atomoxetine), as well as tendency to sedentary lifestyle and poor aptitude for physical activity, can affect the nutritional status in these patients.

On the other hand, type of diet can influence ASD; moreover, ASD children are more likely to have food allergy and Coeliac disease, worsening ASD

Angelo Michele Carella

Internal Medicine Department of T. Masselli-Mascia Hospital San Severo (Foggia), Italy

Biography

A.M. Carella, after Medicine degree, obtained specialization in Internal Medicine, postgraduate diplomas in Diabetes and Obesity and university Master's Diploma in Healthcare Management. He operates at the Internal Medicine Department of T. Masselli-Mascia Hospital in San Severo (Foggia), Italy. He took part, as chairman/speaker, in national and international scientific congresses/meetings and he is member of Italian Association of Dietetics and clinical nutrition (ADI) and Diabetes and Cardiovascular Disease Study Group of EASD. Research areas/field of expertise: Internal medicine; diabetology; nutrition, obesity and metabolism; cardiovascular diseases; oncology.

symptoms; Gut dysbiosis, more frequent in ASD, can also worsen digestive and neurological symptoms. This is the why children with ASD sometimes undergo to non-intentional and dangerous dietary restrictions protocols, based on non-evidence-based attempt, to improve behavioral disturbances or digestive symptoms. There is a lack of clear evidence on the benefits of gluten/casein-free, sugar-free or ketogenic or GAPS diet and, although many studies have demonstrated clinical improvement in these patients, the evidence is not strong enough to recommend them as a treatment for ASD; better well-designed, and high-quality clinical trials are needed to validate their potential. However, any dietary therapy requiring strict adherence may be extremely difficult to manage for patients and families/caregivers, thus increasing stress and discomfort. Personalized diet, based on behavioral disorders severity, patients compliance and dietary adherence should be preferred.

Audience Take Away Notes

- The audience will be able to use what they learn in daily clinical practice
- This help the audience in their job in nutritional management of ASD patients
- Yes, I hope this research that other faculty could use to expand their research or teaching
- I wish so this provide a practical solution to a problem that could simplify or make a designer's job more efficient
- I wish so it improve the accuracy of a design, or provide new information to assist in a design problem

Connecting our research to improving the food system

Food science and technology researchers may improve the impact of their work by considering potential changes needed in the food system to make it resilient during climate change. The presentation will encourage participants to reflect more broadly on where their work may impact the many facets of the food system and how it can intersect with other disciplines. The Food, Agriculture, and Water Day thematic focus at the UN Climate Change Conference (UNFCCC COP 28) December 2023 in Dubai, United Arab Emirates, is a pivotal change in world leaders' recognition that food systems are integral to climate change management and impacts. Research has estimated global food emissions are 34% of all GHG emissions (Crippa, M., et.al. 2021). The food system not only impacts climate change by providing a large portion of emissions but it is also impacted by climate change through extreme weather occurrences and lowering yields and nutritional content (Sandalow, D., et al., 2022).

The food system has many disciplines and components that require interactive study to address industry-wide changes. The study of different food system frameworks shows performance can only improve when decision-makers understand these underlying interactions and dynamics of food systems change (Brouwer, I.D. et al., 2020). Collier, S.M. et al. (2024) and J. Hartle et al. (2017) found that limited interaction between disciplines and silos in food-related academics resulted in a narrow scope of education within classes and less ability for students to provide impact in the food industry.

To build the capacity for food system improvement, food researchers need to explore paths where their work impacts the changing system at multiple levels and engage in interdisciplinary discussions. Research-based principles can be followed for researchers from diverse disciplines to collaborate (R. Brown et.al., 2015) to achieve significant positive impacts gained from interdisciplinary collaborations (Okamura, K. 2019). Interactive components of this presentation will teach conference participants from varied disciplines how to creatively develop concepts to build resiliency in food systems during climate change.

Audience Take Away Notes

- Attendees will learn to explore how their work connects more broadly to a food system impacted by climate change
- How to reflect on the impacts of their work within the many areas within the food system
- Review how climate change interplays with the food system
- Attendees will learn to communicate with others in different disciplines to creatively explore how their work could further build resilience to climate change
- Activities to broaden perspectives on work considering climate change and how to work with and consider other expertise to expand creativity and impact

Holly Gatzke

Extension, College of Agriculture, Biotechnology, Natural Resources, University of Nevada, Reno, Nevada, United States of America

Biography

Dr. Holly Gatzke received her Ph.D. at the University of Saskatchewan, Canada in 1994. She worked in producer organizations and private businesses to connect researchers, industry representatives, and farmers to common goals. In 2000-05, Holly worked with Pulse Canada, where she established the nationwide research division to bring researchers together to develop a national cross-discipline research strategy to enhance the edible legume industry in Canada. In 2005, Holly joined the University of Nevada Extension, where her work consisted of developing local food businesses through food production techniques, distribution systems, marketing, value-adding, and healthy eating access and education.

Effectiveness of atmospheric cold plasma in inactivating microorganisms

The environmentally conscious Cold Plasma (CP) technique is undergoing continuous improvement to effectively reduce microbial load in food products, biological substances, and packaging materials. The primary focus lies on understanding the interaction between reactive organisms and bacteria within food items to render them harmless. Recent studies conducted with two distinct reactor systems have demonstrated that CP technology exhibits remarkable proficiency in decontaminating high moisture beef slices. Moreover, it has been discovered that cold plasma activated water can be efficiently utilized for decontamination purposes. Thus, by refining this innovative method, a significant step towards enhancing food safety and agricultural practices is being taken.

The effectiveness of a state-of-the-art plasma leap water reactor in eliminating bacteria was examined by conducting experiments on the most commonly found bacterium, Escherichia coli. The results obtained from these tests revealed that the Plasma-Activated Water (PAW) generated by the reactor successfully rendered all bacteria inactive, achieving a reduction of 6 logarithmic units after only 5 seconds of treatment. This breakthrough technology offers an array of applications, including its potential as an eco-friendly substitute for conventional methods of food preservation.

Research on edible coating that incorporates cold plasma in order to address the challenges posed by the limited shelf life of fresh-cut products due to issues like microbial contamination and spoilage. This innovative approach aims to extend the longevity of fresh fruits by utilizing cold plasmas to generate reactive nitrogen and oxygen species, which effectively cleanse the produce. Furthermore, efforts are being made to enhance an existing prototype PAW system, unravel the action mechanisms of this technology, and assess the release profiles of active species onto the surface of edible foods through the application of plasma bubbles.

The fruit industry has the opportunity to greatly benefit from the potential impacts that the project can have on various aspects, such as enhancing the quality of fruits, prolonging their storage life, reducing waste generation, and promoting environmental sustainability. Moreover, we thoroughly examine the overarching goal in the long run and also delve into the potential challenges that may arise along with discussing the feasibility of implementing a sustainable synergy of PAW and edible coatings.

Dr. Kasiviswanathan Muthukumarappan

Department of Agricultural and Biosystems Engineering, South Dakota State University, Brookings, South Dakota 57007 USA

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.

Audience Take Away Notes

- This research can be beneficial to a variety of individuals, such as researchers, professionals in the food industry, and educators, that make up the audience. The findings of this study have the potential to provide advantages to these different groups
- Professionals in the food industry can apply the findings of this research to improve food safety measures. The utilization of atmospheric cold plasma technology can assist in efficiently deactivating microorganisms on the surfaces of food, resulting in improved food quality, increased shelf life, and decreased chances of foodborne diseases
- Other faculty members in related fields can utilize this research to broaden their own studies and educational resources. The thorough examination of the effectiveness of cold plasma in deactivating particular microorganisms establishes a basis for future exploration in the areas of food safety and microbiology
- This research provides a practical solution for designers and engineers in the food processing and packaging industries. By using atmospheric cold plasma technology, the process of microbial decontamination can be simplified and made more efficient, benefiting both the environment and industry professionals
- The research results can help enhance the precision of food processing designs by providing insights into the efficacy of cold plasma in eliminating different microorganisms. This knowledge allows designers to customize their processes for improved microbial control and product safety
- The research offers fresh insights on the utilization of cold plasma technology to eliminate microbes, which can help designers overcome issues concerning food safety and quality control. The thesis provides valuable data and methodologies that can be used as a resource for creating innovative approaches in food processing
- Potential advantages include the possibility of utilizing cold plasma technology in industrial and commercial settings. This could lead to more sustainable and environmentally conscious practices in food processing. Additionally, it has the potential to improve food quality, extend shelf life, and enhance safety standards. Furthermore, it serves as a foundation for future advancements in food safety technologies and contributes to expanding knowledge in the realm of atmospheric cold plasma applications

Comparison of life expectancy gains from sustained changes from typical dietary patterns in seven countries to longevity-optimized, vegetarian, or feasible dietary patterns

Healthy eating is associated with a range of favorable health outcomes. We have previously published the Food4HealthyLife model that estimated the impact of dietary changes on life expectancy gains, but did not consider height, weight, or physical activity. The objective of this work was to estimate the life expectancy gains from the transition from typical national dietary patterns to longevity-optimizing dietary changes, more feasible dietary modifications, and optimized vegan dietary changes for China, France, Germany, Iran, Norway, the United Kingdom, and the United States.

Our modeling study used data from meta-analyses presenting dose-response relationships between intake of fifteen food groups and mortality. Background mortality data were from the Global Burden of Disease study. We used national food intake data and adjusted for height, weight, and physical activity level.

Our results indicated that for 40-year-olds, estimated life expectancy gains ranged from 6.2 years (with uncertainty intervals 5.7; 7.5) for Chinese females to 9.7 years (8.1; 11.3) for US males following sustained changes from typical country-specific dietary patterns to longevity-optimized dietary changes, and from 5.2 years (4.0; 6.5) for Chinese females to 8.7 years (7.1; 10.3) for US males following changes to an optimized vegan dietary changes.

In conclusion, a sustained change from country-specific typical dietary pattern patterns to longevity-optimized dietary changes, more feasible dietary changes, or optimized vegan dietary changes, were all projected to result in substantial life expectancy gains across ages and countries. These changes included more whole grains, legumes, and nuts, and less red/processed meats and sugars and sugar-sweetened beverages. The largest gains from dietary changes would be in the United States.

Audience Take Away Notes

- The presentation will present a model for life expectancy gains from sustained change in dietary intake using data from meta-analyses, from the Global Burden of Disease study, and life-table methodology, together with population data on eating patterns, while adjusting for height, weight, and activity level
- The presentation will show contribution from different food groups in life expectancy gains

Lars T. Fadnes[1,2]* (MD), Elaheh Javadi Arjmand[1,2] (MD), Jan-Magnus Økland[1,3] (MA), Carlos Celis-Morales[4,5] (PhD), Katherine M. Livingstone[6] (PhD), Rajiv Balakrishna[1] (MD), John C. Mathers[7] (PhD), Kjell Arne Johansson[1,2,3] (MD), Øystein A. Haaland[1,3] (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]Bergen Centre for Ethics and Priority Setting, University of Bergen, Norway

[4]Education, Physical Activity and Health Research Unit, University Católica del Maule, Talca, Chile

[5]School of Cardiovascular and Metabolic Health, University of Glasgow, G12 8QQ Glasgow, United Kingdom

[6]Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, 3220, Australia

[7]Human Nutrition & Exercise Research Centre, Centre for Healthier Lives, Population Health Sciences Institute, Newcastle University, Newcastle upon Tyne, NE2 4HH, UK

- It also enables understanding the potential impact on life expectancy of sustained changes in intake of specific food groups. This could guide decision making by clinicians and policymakers

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 has worked with research on dietary patterns and associations with chronic diseases. He has published more than a hundred scientific papers, many of these with high impact.

Polycystic ovary syndrome in young females: Presentation of the research outcomes

Polycystic Ovary Syndrome (PCOS) is the most common cause of hyperandrogenism in girls and women. According to the commonly used Rotterdam criteria, the incidence of PCOS in women ranges from 3% to 26%, and in adolescents, it is about 8%. Clinically hyperandrogenism is manifested by severe acne, scanty or infrequent menstruations, and male hirsutism. Skin changes in the form of acanthosis nigricans, lowering of the voice pitch, and depressive syndromes are also often visible. Laboratory tests show borderline or slightly elevated testosterone, androstenedione and DHEA-S levels.

Ultrasound examination of the ovaries often reveals their multifollicular structure and increased volume. The initial diagnosis of PCOS can be made in adolescence. Apart from endocrine and reproductive disorders, metabolic changes are often observed in PCOS patients: increased insulin concentration, insulin resistance, and even type 2 diabetes. Moreover, lipid disorders are present. Weight loss is an important component of the management of adolescent patients with PCOS. Obese adolescents with PCOS have more a severe metabolic and hormonal profile than normal-weight adolescents with PCOS. In particular, visceral obesity and excess adipose tissue exacerbate Insulin Resistance, dyslipidemia, and hormonal disorders.

Małgorzata Mizgier

Department of Sports Dietetics, Chair of Dietetics, Faculty of Health Sciences, Poznan University of Physical Education, Poznan, Poland

Biography

Małgorzata Mizgier is Associate Professor at the Poznan University of Physical Education, Department of Sports Dietetics, Chair of Dietetics, Faculty of Health Sciences. She received her Ph.D. from the Department of Hygiene and Human Nutrition, Dietetics Division, at Poznan University of Life Sciences; Habilitation at Poznan University of Medical Sciences, in the field of health sciences and medical sciences. The focus of her current research includes the influence of diet and physical activity on clinical, hormonal, immune-metabolic parameters in females with Polycystic Ovary Syndrome, menstrual disorders, infertility, and pregnancy.

Chitosan/ɣ-cyclodextrin-graphene quantum dots composite as a high-performance electrochemical sensing platform for global estimation of fluoroquinolones in food products from animal source

Fluoroquinolone (FQs) antibiotics are broad-spectrum agents widely used to treat a range of infections in the veterinary field or even in human medicine. In recent years FQs have been used in an abusive way within the alimentary industry, leading to the appearance of quinolone resistant microorganisms and reducing so the effectiveness of FQs-based drugs for the treatment of infection diseases at both animal and human levels. In consequence, diverse international organizations have established legislation and regulations regarding the maximum amount of quinolones allowed in food. Hence a new electrochemical approach based on a new designed nanocomposite material modified on Screen Printed Carbon Electrodes (SPCE), which is the result of an assembly from graphene quantum dots functionalized Gamma Cyclodextrins and Chitosan (γCDs-GQDs/CHI), has been proposed for the full voltammetric sensing of FQs content in alimentary samples.

Nanostructural and morphological characterization of synthesized composite were assessed by High Resolution Transmission Scanning Microscopy (HR-TEM) and Dynamic Light Scattering (DLS). Graphenic structures and correct functionalization of GQDs were confirmed by X-ray Diffraction (XRD) and Fourier Transform Infrared Spectroscopy (FTIR) respectively. Electrochemical properties of the sensing nanocomposite and involved redox analytes were evaluated by Cyclic Voltammetry (CV) using potassium ferricyanide as redox probe. The developed sensing system exhibits improved electrocatalytic performance throughout FQs oxidation in terms of relevant electrochemical features as electronic transfer rate (K0), electroactive Area (A) and double Capacitance layer (Cdl). Electrochemical mechanism of the redox process was also studied on four representative quinolones attending to their distinctive chemical structures, obtaining in all cases the same number of e^- (2) and H^+ (2) involved in their oxidation process, which suggested a single oxidation mechanism for all FQs, also here elucidated.

Electroanalytical performance features were investigated on mixtures of four FQs selected as representative ones of the electrochemical behaviour for the whole family. Satisfactory results were obtained in terms of linear range (4–250 µM) and lower detection limit (LOD=1.2 µM). The designed sensor allowed the determination of FQs global contain in broths, bouillon cubes and milkshakes at three concentration levels (150, 75 and 37.5 µM) for both equimolar and different FQs ratios in their mixtures, with recoveries ranging from 90 to 106%.

MJ. Villaseñor Llerena[1,3]*, M. Bartolomé Díaz[2,3], A. Ríos Castro[2,3]

[1]Department of Analytical Chemistry, Industrial Engineering School, University of Castilla-La Mancha, 13071, Ciudad Real, Spain.

[2]Regional Institute for Applied Chemistry Research (IRICA), 13071, Ciudad Real, Spain

[3]Department of Analytical Chemistry and Food Technology, Faculty of Chemical Science and Technology, University of Castilla-La Mancha, 13071, Ciudad Real, Spain

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

Audience Take Away Notes

- Attendants can learn about electrochemical sensing methodologies as analytical tools
- Master and PhD students can deepen their electrochemical knowledge
- Learning about microscopic and spectroscopic characterization of nanomaterials
- Application to realistic scenario where the determination of FQs should be considered to keep down antimicrobial resistance issues

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.

Molecularly imprinted polymers for mycotoxins analysis in foods

Public concern associated with food and feed contamination with toxigenic fungi or their metabolites has risen significantly in recent decades because of the well-known negative impact of these compounds on human health, including carcinogenic, teratogenic and nephrotoxic effects, among others. For this reason, the European Commission has already set maximum levels for several mycotoxins in different types of foods. From an analytical point of view, mycotoxins analysis is a challenging task, especially when employing cheap and non-sophisticated approaches. In fact, these compounds are generally present at low concentration in really complex matrices; therefore, a sample preparation step is often mandatory for analytes pre-concentration as well as interferences removal. In this context, Molecularly Imprinted Polymers (MIP) sorbents, which are synthetic materials with a three-dimensional cavity able to selectively bind a target compound or a class of structural analogues, may represent an analytical solution for the selective extraction and therefore analysis of these compounds in foods. This presentation will present the research activities that have been carried out to develop and validate reliable methods for the extraction of zearalenone and patulin from several food samples using Molecularly Imprinted Polymers as Solid-Phase Extraction sorbents (MIP-SPE). The methods herein proposed have been in-house validated and compared with other extraction procedures, such as conventional SPE, QuEChERS and liquid–liquid approaches. Advantages and drawbacks of the proposed methodologies will be also discussed.

Audience Take Away Notes

- Extraction efficiency of mycotoxins using molecularly imprinted polymers as SPE sorbent
- In-house validation of method based on MIP-SPE for mycotoxins analysis
- Advantages/drawbacks of molecularly imprinted polymers in foods analysis

Paolo Lucci*, Benedetta Fanesi, Deborah Pacetti

Department of Agricultural, Food and Environmental Sciences, Polytechnic University of Marche, 60131 Ancona, Italy

Biography

Prof. Paolo Lucci attained his PhD in 2008 at SAIFET department of the Polytechnic University of Marche (Italy). Starting from February 2009, he joined the NASCENT European Project as an experienced researcher (Marie Curie Postdoc) at POLYIntell SAS (France) and then in 2010 he spent one year as experienced researcher (Marie Curie Postdoc) at the Department of Analytical Chemistry of the University of Barcelona within the Carbosorb European Project. In April 2011, he joined the School of Sciences of the Pontificia Universidad Javeriana (Colombia) where he was named Head of the Research Group of Foods, Nutrition and Health in 2012 and then head of the Department of Nutrition and Biochemistry in 2014. From 2018 is Associate Professor in Food Chemistry, previously at the University of Udine, and then from 2022 at the Department of Agricultural, Food and Environmental Sciences, Polytechnic University of Marche (Italy).

The dis(ease) ability theory-new step the real narration possible: Resilient reaction thrust, constant condition over time, potential evelopment potential

This new work starts from the analysis that has rarely taken into consideration those subjects who, with their difficulties of action, are defined disabled and undermine educational acts in the classroom.

In promoting a change of thought that meant a real change of attitudes functional to the promotion of the individual's autonomy, through the construction of skills to encourage the learning process, I stated that we are all subject to resilient states but, in those subjects with a diagnosis, in their narration, this state stands as the constant capacity in time to redesign the relationship with his/her environment of - emotional, social, formative, affective life-thus enhancing himself/herself and his/her context.

Therefore, the objective of the true narration is given by the analysis of the resilient reaction thrust that the individual matures in his/her life time, according to his/her age, where each training step will have its relationship of resilient thrust or reaction to it in order to achieve his/her potential development.

In the educational field, therefore, the functional availability to learning, to achieve the maximum possible autonomy of the person is given by the resilient evolution of the same to his state where, the Narration is nothing more than the description of this evolution in connection with the residual operation determined in ICF-CY code.

Only in this way it will be possible to organize appropriate methodological/didactic strategies at school level, empathetic on the affective/relational level. As a consequence it will be possible to improve the personal autonomy in working contexts and the expected results will only be successful.

Thus, the person's vision becomes new because it is analyzed as the result of a series of factors that represent the reference context in which he/she lives and expresses his/her capabilities.

Audience Take Away Notes

- The analysis of my research project promotes the functional narrative investigation of each subject whose somatic, clinical, or pathologically compromised characteristics require in- depth knowledge to personalize nutrition
- Mastering the methods of functional narration in a scientific way will best help in discovering, especially in those subjects clinically compromised by serious and/or very rare pathologies and/or without verbal communication, which foods are most suitable for supporting the clinical data by satisfying the individual and his tastes

Raffaella Conversano

I.C. “Giovanni XXIII-Pascoli”, Fasano (BR), Italy, Adjunct Professor Laboratory of Special Needs Education, For.Psi.Com., University of Bari, Italy, UTL University of free time “San Francesco D’Assisi” Fasano (BR) -Puglia, Italy

Biography

Raffaella Conversano was born in Fasano, she is a Teacher specialized in Special Teaching Role (Support) at the IC Bianco-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).She is also an 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. Additionally, she serves as an Honorable Editor for American Journal of Biomedical Science & Research. She is the author of 60 global publications. Her research focuses on the strategic use of educational technologies in

- It is a fundamental research focus for teachers in their daily investigation
- If used in a functional way, it is an excellent tool for designing a nutritional path in various contexts, including and above all clinical ones
- Extremely optimally, it will improve the accuracy of a design or provide new information to assist with a design problem

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 in different study contexts. She is the author of the innovative Pedagogical The Dis(ease)Ability Theory.

Innovative food safety training solution using behavioral sciences to increase knowledge retention and behavioral change

The importance of training food handlers is critical to effective food hygiene; however, there have been limited studies on the effectiveness of such training.

Food safety training courses are administered worldwide in attempts to reduce outbreaks in food service, retail and temporary food service establishments. However, food handlers often exhibit a poor understanding of microbial or chemical contamination of food and the measures necessary to correct them.

Studies suggest that the provision of a hands-on training platform embedded in behavioural sciences would be more beneficial than traditional classroom-based programs. The delivery of such a program will assist in changing ones' food safety behaviours and aid in the retention of knowledge that are necessary to reduce the incidence of foodborne illness.

I will discuss a new innovative approach to food safety training that is hands-on, interactive and heavily rooted in the behavioural sciences. The talk will also cover innovative solutions to increase food safety knowledge retention for foodservice workers including proven scientific methods in learning and development such as the spacing effect.

Robert Mancini

Kansas State University, USA

Biography

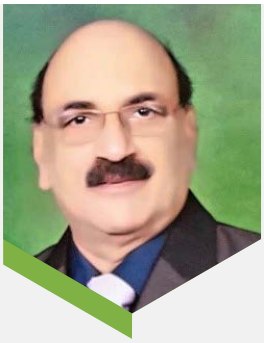
Rob Mancini has vast experience and knowledge in the field of food safety, with specific emphasis on alternate modes of food safety training and behavior science. Rob has more than 20 years' experience in Regulatory Compliance and as a Certified Public Health Inspector. In Canada, he provided expert advice on revisions made to the Canadian Food Retail and Food Services Code and Federal/Provincial/Territorial National Guidelines for Food Safety Training. Rob hosted and provided research for the television series Kitchen Crimes for Food Network Canada, H.G.T.V. (U.S.) and Discovery Asia. He has provided expert opinion on food safety for varying levels of Government in Canada and is an active speaker on food safety and an author on Barfblog. He currently holds a Master's Degree in Food Safety through Kansas State University.

Impacts of climate change on agriculture and food security

Climate change has emerged as significant manmade global environmental challenge marked by rise in ambient temperature of the earth due to release of greenhouse gases in large proportion into the atmosphere by burning of fossil fuels, industrial processes, deforestation, and agricultural practices. Global mean temperature of the earth has increased by 0.8°C over the past century and is anticipated to raise another 1.5–4.8°C over the next hundred years. Rise in global mean temperature is supposed to alter climatic patterns like floods, draughts, and incidents of the El-Nino and La-Nina, thereby affecting human life supporting system and global food production leading to food insecurity in terms of food availability, accessibility, utilization, and food system stability. In the aforesaid backdrop, the present chapter provides an insight into the climate change and its causes, impacts on agriculture, including the implications for food security, adaptation, and strategies for its mitigation.

Audience Take Away Notes

- This topic will help About knowing the impact of climate on Agriculture and food security coming up
- Yes, the researchers or teachers can work on the impacts of changing climate on agriculture and crop patterns impact on yields and the impact on food security and safety to the growing population



Prof. Shashi Vemuri

Senior Advisor and Director,
Food Hygiene Bureau of Jamaica,
Kingston, Jamaica

Biography

Prof. Shashi Bhushan Vemuri holds a Doctorate in agricultural Entomology with specialization in Insect Toxicology and Pesticide Residues. He previously served as a Senior Professor/principal scientist and university head of entomology at Hyderabad, India with more than 40 years experience in different capacities as Professor/ Researcher and Extension scientist, Administrator, Head of the Research Centres and Extension centres. He has participated in various international and National conferences, workshops and has excellent links with many ICAR and State Universities, Universities abroad and leading MNCs. As a globally travelled Agricultural professional and he has strong professional relationships with policy makers, Administrators, farmers organizations and Agribusiness sector with a thorough understanding of the complex socio-economic, political, cultural and environmental aspects of Agriculture in India and other major agrarian economies across the world. Currently, he serves as Senior Advisor Business Development and Director of Food Hygiene Bureau, Caribbean.

Soil, food security and human health

Soils are important for human health in a number of ways. Approximately 78% of the average per capita calorie consumption worldwide comes from crops grown directly in soil, and another nearly 20% comes from terrestrial food sources that rely indirectly on soil. Essential nutrients (18) play an important role in plant growth and synthesis of food. Therefore, soils that provide a healthy, nutrient-rich growth medium for plants will result in plant tissues that contain most of the elements required for human life when the plants are consumed. Food security is achieved when all people have access to sufficient, safe, and nutritious food. Food security is central to human health and the ability to produce nutritious crops in sufficient amounts depends on soil properties and conditions. In particular, soils that have well-developed structure, sufficient organic matter, and other physical and chemical properties conducive to promoting crop growth lead to strong yields and are thus important for food security. If the soil is supply adequate amount of nutrients for food, the human health also benefits. Hence, availability of important nutrients such as Potassium (K), Sulphur (S), Iron (Fe) and Zinc (Zn) in soil can play a vital role in ensuring food security. Quality food production and food security have several components, including the production of sufficient amounts of food, adequate nutrient content in the food products, and the exclusion of potentially toxic compounds from the food products. A balanced diet is one which includes a variety of foods in adequate amounts and correct proportion to meet the day's requirement of all essential nutrients such as proteins, carbohydrates, fats, vitamins, minerals, water and fiber. Soils play a major role in all of these areas of quality food production and security for better human health.

Audience Take Away Notes

- Healthy soils are the basis for healthy food
- Soils supply the essential nutrients that our food –producing plants need to grow and flourish
- Healthy soils produce healthy crops that in turn nourish human health
- The deficiency of K, S, Fe and Zn affect human health considerably
- Lack of adequate food and food of poor nutritional quality lead to differing degrees of under-nutrition, which turn causes ill health
- Food security to ensure adequate and nutritious food is vital in human health in years to come

Surendra Singh

Department of Soil Science and Agricultural Chemistry, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi (UP), India

Biography

Prof. Surendra Singh, Formerly Head, now senior professor in the Department of Soil Science and Agricultural Chemistry obtained. M.Sc. (Ag) and Ph.D. Degrees in Soil Science and Agricultural Chemistry, Banaras Hindu University. Altogether, he has experience more than 35 years (teaching, research, extension, consultancy, development, administration, etc.). Singh has more than 280 publications of national and International repute to his credit. He has guided/advised many M.Sc. and Ph.D. students in Soil Science and Agricultural Chemistry. Dr. Singh has successfully executed more than 19 externally funded research, extension and developmental projects as Principal investigator. He received prestigious several awards of national and International. Attended as speaker in the Euro-Global Conference on Food Science, Agronomy and Technology held, September 20-22, 2018 at Rome, Italy and 22nd World Congress of Soil Science held, 31 July-5 August 2022, Glasgow, Scotland, UK. Attended 5th Edition Euro-global Conference on Food Science and Technology held September, 11-23, 2023, Valencia, Spain.

Green synthesis, biochemical characterization and antibacterial activity from *Dioscorea pentaphylla*

Ethnomedicinal research offers valuable insights for the advancement of drug discovery through the utilization of medicinal plants, which are essential natural resources crucial for human well-being. Medicinal plants represent as an alternative treatment to various diseases, and their use is increasingly prevalent throughout the world. The highly medicinal dioecious Dioscorea of Dioscoreaceae contains more than 600 species globally. The Dioscorea rhizomes are renowned for their ethnobotanical, Nutritive, antioxidant, and biological potentiality that ensure the quality of daily nourishment of the indigenous people. Nanotechnology encompasses a diverse field of study that explores the various characteristics of nanoparticles. in nutrients and herbal medicines, The Qualitative screening for phytochemicals revealed the presence of both flavonoids and many other phenolic components have been reported for their effective antioxidants, anticancer, antibacteria, cardioprotective agents, anti-inflammation, immune system promoting, skin protection from UV radiation, and interesting candidate for pharmaceutical and medical application. The GCMS analysis of the ethanolic extract of Dioscorea pentaphylla rhizome showed the presence of 20 phytocompounds. The bio reduction initiated which revealed the UV spectral peak sharp and stable peak at 250-475 nm which clearly emphasizes the Nano synthesis has been initiated in the Dioscorea pentaphylla rhizome extract by the metal silver nitrite. FTIR analysis reveals the Dioscorea pentaphylla rhizome extracts possess a wide range of functional groups namely carboxylic acids, alkanes, alcohols, organic acids, aromatic compound and halogen respectively. The Scanning Electron Micrograph (SEM) of the present analysis clearly picturized the oval, cuboidal and spherical structural morphology which may be due to the optical groups aiding in the stability of the above structures (spherical/oval). The amount of total polysaccarides, protein content amount of protein (3.5±7.8). The cholesterol (2.5±0.01) levels in Dioscorea pentaphylla rhizome was notified to be significant. The mineral calcium, (14.5±27.4) and antioxidant vitamins A and vitamin C. The Antibacterial study provided an effective inhibitory activity against the selected strains (E.coli and Bacillus subtilis). Invitro antioxidant status of Dioscorea pentaphylla rhizome extract exhibited notable antioxidant radical scavenging activity, DPPH showed effective antioxidant potential.

Dr. M.Suriyavathana Professor

Plant Therpeutics Laboratory (PTL), Department of Biochemistry, School of Biosciences, Periyar University, Salem-11, Tamil Nadu, India

Biography

Prof. M. Suriyavathana, M.Sc., M.Phil., Ph.D graduated at Bharathiar University in 1991. She received her Doctoral degree in 2007 at the Bharathiar University. She obtained the position of Professor at Periyar University, Salem, Tamil Nadu. To her credentials she has published 110 research articles (national & international) and 3 books (national & international). To her research expertise she has guided 37 M.Phil and 23 Doctoral candidates (Ph.D). She has delivered 7 plenary lectures in International conferences including at USA and UAE. She has organized 10 national and international conferences and seminars, participated and delivered 70 national and international conferences and seminars and she has received her patent, to her credit she has been awarded as Best Researcher /Women scientist in 2015, Outstanding researcher in Plant therapeutics and Clinical Biochemistry (2015), Indo Asian Research Excellence Award (2022) and Outstanding Scientist Award (2023).

Harmonization principles of food ecolabelling and nutrition claims labelling

Harmonized rules of menu eco and nutrition labelling represent the keys for transparency in declaration and equity in commercialization, in the benefit of the final consumer. The final consumer need correct and simple information regarding the energy value and principal components with impact on human health. In this moment, the legislation is axed on the nutritional components with negative impact on public health but the balance of nutrients from daily's diets need to be considered, not for individual dishes, beverages or meals (breakfast, lunch, dinner, event menus).

The science-based solution that the author propose to be used in the harmonised menu nutrition labelling is the personalized nutrition assessment of the daily nutrients intake correlated with using the menu composition information's declared on the nutrition label, as single solution to correct individual, groups and social communities nutrition. Harmonization of key science-based solutions could be implemented by the academia in collaboration with the standardisation association, integrating the society needs and considering implementation power of the foodservices units. In the previsions research study (Vintila, 2021), the author proposed a simple legal procedure of expressing and designing the menu's nutrition declaration strictly according with the Annex XV of Regulation (EU) NO. 1169/2011 requirements, in a classic format (listed in the menu, as a nutritional statement) and in electronical format (QR code).

The scientific assessment of the nutritional and environmental impact of outlet catering daily menus production and serving procedures reflect the fact that the foodservice activities ecological footprint depends on number of servings, the complexity of recipes and the nature of food ingredients (Vintila, 2023).

Audience Take Away Notes

- Global harmonization of eco and nutrition labelling
- Optimal solutions for the consumer choices
- Good ideas to be used by the consumer protection organizations
- Improvement of the industrial and casnic menu's production

Vintila Iuliana

Department of Food Science, Food Engineering and Applied Biotechology, University Dunarea de Jos Galati, Romania

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), first author and co-author for 14 articles in ISI journals and relevant ISI proceedings, 110 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 act 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, Editorial Board Member International Scholar Journals, EC Nutrition, etc.

Introduction of the HOFOOD project and engineering approaches on the relationships between nutrition and high pressure processed foods

Innovative High-pressure process to increase the preservation of ready-to-eat Organic FOOD (HOFOOD) project was an international project carried out within the scope of SUSFOOD-CORE ORGANIC with partners from Italy, Algeria, Poland and Türkiye. This project aimed to develop an innovative mild food processing technology. In the content of project that developed technology was applied to process of fresh foods such as melon squash and almond which were packaged with CO2 medium. That technology based on high pressure, at low temperature to improve the safety and extend the shelf life of ready to eat organic fresh products with minimal losses of sensitive bioactive components. HOFOOD project focuses on the design of a high pressure application machine/process and food quality. This process was planned to provide a high pressure application that can operate with low investment and operating cost. To determine the physical, chemical, microbiological, sensorial and nutritional properties of processed foods were analyzed. One of the important obstacles to the proliferation of high pressure systems is the high investment cost. Obtaining products with the desired sensory, chemical and shelf life properties at lower investment costs is thought to be important. One work package of this project was a comparative investigation of the effects of high pressure treated foods on the bioaccessibility of valuable components such as total phenol, antioxidants and carotene.

Previously, High Pressure Processing (HPP) application was defined as a non-thermal process that could extend the shelf life without causing losses in food quality, and studies were concentrated in this area. However, today, in addition to these studies, research is being carried out on the effects of high HPP on the bioaccessibility of components in foods. It is reported that HPP increases the extraction and bioaccessibility rates of phytochemicals, especially by increasing permeability the plant cell walls. In this way, more bioaccessibility can be achieved from the functional components of foods. Nowadays, foods are consumed not only for pleasure or satiety but also to obtain health benefits from these foods. From this perspective, it is thought that the use of HPP application in the production or processing stages of functional foods, food supplements, fortified foods or food supplements can make these products more useful. Optimizing the pressure, temperature and time parameters that are effective in HPP application to increase bioaccessibility can help you benefit more from the products.

Heat treatment applications may cause losses in nutrients that are sensitive to temperature. HHP, on the other hand, provides protection at low temperatures and can minimize the change in the sensory properties of foods. It is thought that with further studies, the demand for foods that

Yasin Ozdemir[1]*, Sara Spilimbergo[2], Riccardo Zulli[2], Zineb Benmechernene[3], Krystian Marszalek[4], Simona Fabroni[5], Alessandro Zambon[2], Pietro Andrigob[2], Fabio Santi[2], Elisa Lincetti[2], Chiara Dittadi[2], Anna Mazzi[2], Seda Kayahan[1], Aysun Ozturk[1], Hasret Altunkanat[1]

[1]Food Technologies Department, Ataturk Horticultural Central Research Institute, Yalova, Türkiye

[2]Industrial Engineering Department, University of Padova (UNIPD), Padova, Italy

[3]Biology Department, University of Oran, Oran, Algeria

[4]Fruit and Vegetable Product Technology Department, Prof. Wacław Dąbrowski Institute of Agricultural and Food Biotechnology, Warsaw, Poland

[5]Council for Agricultural Research and Economics Research Center for Olive, Fruit and Citrus Crops, Acireale, Italy

are healthy but not sensory demanding due to traditional processing methods may be increased. Since HPP application can preserve the natural aroma of foods, it is possible that natural and beneficial foods will be more demanded by consumers.

It is thought that, like HOFOOD project, new scientific studies on this subject, high pressure application can contribute to the introduction of functional foods that are both rich in content and have high bioaccessibility to the market. It is foreseen that the production of special foods that are more beneficial to public health will be possible with the development of new high pressure methods.

Audience Take Away Notes

- Audience can gain new perspectives for new technologies that can increase extraction. In this way, they can try new technologies to increase extraction or bioaccessibility in their field of work. They will be able to increase the bioaccessibility they may need
- Audience can find new ideas about HPP for food technology, drug technology and pharmacology
- There is a possibility for food supplement producers to produce more beneficial product by using HPP. Food or other products processed with HPP can provide a competitive advantage over ordinary products. It may create the possibility of standing out by providing differentiation in the market
- It will give general and new ideas about increasing potential beneficial effect of functional components of foods or products such as supplements or drugs

Biography

Dr. Yasin Ozdemir studied Food Engineering at the Ege University, Turkiye and graduated as MS 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 is currently leading 4 national research project which supported by Republic of Turkiye Ministry of Agriculture and Forestry, General Directorate of Agricultural Research and Politics (TAGEM) and 5 private sector supported food technology projects. Dr. Ozdemir also take parts as a researcher in international project focused on bioavailability and food science/technology. He published more than 100 article in international journals and congress proceedings.

BOOK OF ABSTRACTS

SEPT

16-18

Joint Event

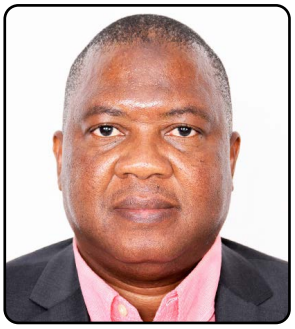
6th Edition of Euro-Global Conference on

Food Science and Technology &

6th Edition of the International

Nutrition Research Conference

ORAL PRESENTATIONS



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

[1]Institut Polytechnique, Département de Génie Chimique, Laboratoire de Technologie Alimentaire, Université Gamal Abdel Nasser de Conakry, BP: 1147, Republic of Guinea

[2]Southern Yangtze University, School of Food science and Technology, Wuxi–214036; Jiangsu Province, Peoples Republic of China

Functional bioactive calcium chelated fibersol-2 desalted by yeast compare to calcium chelated oligopeptides

A substantial amount of work has been carried out on interactions between metal ions and simple amino acids and peptides. Since 1969 Wander and Willouhby studied the structural aspect of calcium ion complexes of oligopeptides. Martin, Petit-Ramel, Sharff, (1973) and Martin (1974) have reviewed the structural aspects and the optical rotator properties of metal ion complexes of small peptides in an exhaustive way. In some cases, oligopeptide sequences reproducing the amino acid sequence of natural products have been show to interact specifically with a given ion as strongly as the native protein (Camerman & Sarkar. 1976). Calcium deficiency may lead to rickets, stunted grow, poorly developed bones and teeth as well as osteoporosis in adults, (Sang. 1977). The absorption of calcium is facilitated by the presence of vitamin D and a normal gastric hydrochloric acid secretion. Lactose (milk sugar), certain proteins and amino acids also stimulate absorption of calcium (Martha. 1983). To be absorbed, the elements need to be in soluble form or at least bound to a compound that can be absorbed and can then release the element (Miller, Schricker, Rasmussen, Van Campen (1981).

Calcium is an important macro-mineral for the human body, but its full potential is not realized due to its poor absorption by the digestive tract (Vincent. 1988). In 1999, Sohrab said that, increasing consumption of calcium containing foods is associated with a reduced rate of polyps and colon cancer.

This study is performed to compare chelating capacity of calcium ions to both oligopeptides isolate form crude corn protein and fibersol-2 desalted by yeast, a complex sugar isolate from corn starch.

Binding was carried out by chelating calcium to the prepared oligopeptides, which are highly absorbable through digestive tracts. The exact amount of chelated calcium in Corn Calcium Oligopeptides (CCO) was 64.22 mg/g with 51.14%. Chelating calcium to fibersol-2 desalted by yeast was also developed, since any calcium chelated to fibersol-2 will be released after the partly fermentation of fibersol-2 in the large intestine.

The percentage of calcium chelated to fibersol-2 was 46.76%, with total and free calcium content 9.27 mg/g and 4.34 mg/g respectively. The data revealed that, the chelation of calcium to fibersol-2 is possible, and there is no gel formation at all. Result in this comparative studies shows that the chemical structural of calcium chelated corn oligopeptide was established, but this formula is not yet establishing for calcium chelated fibersol-2 desalted by yeast.

The consumption of these functional protein-like substances is a good way for self-monitoring to achieve the Recommended Dietary Allowances (RDA) of calcium, with the aim of finding solution to control the calcium deficiency diseases.

Keywords: Oligopeptides, Eibersol-2 Desalted by Yeast, Chelated Calcium, Recommended Dietary Allowances, Gastrointestinal Calcium Absorption.

Audience Take Away Notes

- This research work will be used by other faculties to expand their research, or their teaching, since the chemical structural of calcium chelated oligopeptides has been established, and yet, the chemical structural of calcium chelated fibersol-2 desalted by yeast has not. Being this, the establishment of this chemical structural appears as a possibility to expand research and teaching processes
- The audience will learn from this research, that by the consumption of both functional foods, calcium chelated oligopeptides and calcium chelated fibersol-2 desalted by yeast, how people achieve the Recommended Dietary Allowance (RDA) of calcium, and to control calcium deficiency disease
- The result of this study will help the audience to understand about how to perform the functional foods, in order to reduce the risks of nutritional deficiency diseases

Biography

Aboubacar Oumar Bangoura is a Former Minister of High Education and Scientific Research, Guinea; Research Scientist; Educator. He holds a PhD in Food Science, School of Food Science & Technology, Southern Yangtze University, China, 2005, and an MSc in Human Nutrition, School of Food Science & Technology, Wuxi University of Light Industry, China, 2000. Head of Advanced Studies Services, UGANC, Dec. 2022. He served as the Head of Division in Advanced Studies Services, UGANC, March 2018. He was also an Assistant to Vice-rector in charge of Scientific Research, UGANC, 2012. He is an Assistant Lecturer in 2007, Assistant Professor and Research Lecturer in 2013. He was Professor and Director of Research on16 November 2020. He has published more than 20 research articles, from the highest scientific publishing house.

Agnieszka Palka
Department of Quality Management, Faculty of Management and Quality Science, Gdynia Maritime University, 81-225 Gdynia, Poland

Quality of ice cream made from sheep, goat, camel, mare and cow milk in relation to consumer attitudes and behavior

The presentation concerns the examination of consumer attitudes and preferences towards ice creams made from various types of milk, as well as the assessment of the quality of ice creams made from sheep, goat, camel, mare and cow milk. The survey on consumer attitudes and behavior towards innovations in ice creams and attitudes towards health-promoting ice creams was conducted. The respondents were also asked about their declaration of willingness to buy such ice cream. At the same time the ice creams were made in the laboratory of Gdynia Maritime University from various types of raw milk: Sheep, goat, camel, mare and cow milk. The ice creams were subjected to consumer evaluation, and the quality of the physicochemical properties was also assessed. These features included basic characteristics of ice cream quality, such as overrun and meltability, but also ice cream texture, color and acidity were examined. The content of protein, fat, sugar, dry matter and ash was determined. Density and viscosity were measured in the ice cream mixture before freezing. The consumer evaluation panel for ice creams assessment consisted of 116 evaluators aged 18 to 50. The assessors assessed the organoleptic characteristics of ice cream on a five-point scale. The analysis of survey results showed that Polish consumers are rather conservative and usually choose well-known, known flavors, but at the same time they are curious about innovations and willing to try new ice creams. Physicochemical tests showed differences between individual types of ice cream in some characteristics, while consumer evaluation showed that the best ice creams were made from goat's and cow's milk, followed by sheep's milk and mare's milk. Camel milk ice cream received the worst rating. The experiment showed that it is possible to produce and commercialize ice cream from various types of milk in Poland, but there is a need to improve the recipes in order to achieve better acceptance for all products.

Audience Take Away Notes

- The presentation will discuss opportunities for innovation in ice cream
- This research can be continued and extended to other milk-based desserts
- The ice creams are ready to be introduced to the ice cream shop
- The possibilities of using different types of milk to produce ice cream and the differences between them will be explained

Biography

Dr. Agnieszka Palka studied Commodity Science at the Gdynia Maritime University, Poland and graduated as MS in 1996. She then joined the research group of Prof. Przybyłowski at the Department of Quality Management, Faculty of Management and Quality Science, Gdynia Maritime University. She received her PhD degree in 2009 at the University of Warmia and Mazury in Olsztyn, Poland. Since then she has worked as assistant professor in Gdynia Maritime University. She has published more than 50 research articles in SCI (E) journals.

Ahmed Sheku Dabo*, Albert Linton Charles
Department of Tropical Agriculture and International Cooperation, National Pingtung University of Science and Technology, Pingtung 912301, Taiwan

Exploring the socio-demographic acceptance of functional foods in the Gambia

Food is crucial for human health and well-being, but concerns exist about its impact, especially in developing countries. Functional Foods (FFs) offer potential health benefits and are gaining popularity. However, there's a knowledge gap about FFs among consumers in countries like the Gambia. This research aims to investigate fundamental consumer attitudes and behaviors towards FFs in The Gambia, including their awareness, level of knowledge, concerns, and perceived importance of FFs. A qualitative research approach was employed, based on a comprehensive literature review to develop research questionnaires on consumer attitudes and willingness to consume FFs. Convenience sampling and judgment sampling were combined for data collection in the five regions of The Gambia, involving Food Safety and Quality Authority officers who facilitated questionnaire translation to participants. The collected data was screened and analyzed using IBM® SPSS® Statistics (v.27.0) and Partial Least Squares (PLS), and the predict significant correlations labelled with a p-value of <0.05 considered significant. The study found that factors like gender, age, education, and income impact people's knowledge of Functional Foods (FFs) in The Gambia. Despite this, most people are aware of FFs and recognize their importance for health. They are particularly interested in consuming FFs for breakfast and lunch. The study also highlighted that family and friends are key sources of information about FFs. Overall, the research provides valuable insights to improve knowledge about FFs and inform policies to promote their consumption in The Gambia.

Keywords: Functional Foods, Food Safety, Consumer Awareness, Consumer Behavior, Consumer Perceptions, Consumer Attitudes, Public Health Policies.

Audience Take Away Notes

- A presentation on the knowledge and awareness of Functional Foods (FFs) in The Gambia can provide the audience with the following insights:
- **Current Levels of Awareness:** Understanding the existing awareness and knowledge levels about functional foods among different socio-demographic groups in the Gambia
- **Perception and Attitudes:** Insights into the perceptions and attitudes of Gambian consumers towards functional foods, including any cultural or traditional influences
- **Factors Influencing Acceptance:** Identification of key factors that influence the acceptance and consumption of functional foods, such as health benefits, accessibility, and affordability
- **Regional Variations:** Analysis of how awareness and acceptance of functional foods vary across the five surveyed regions of The Gambia
- **Recommendations for Promotion:** Strategies and recommendations for increasing awareness and promoting the consumption of functional foods based on the survey findings
- The audience will be able to use what they learn from the presentation to design effective awareness campaigns and educational materials that address misconceptions and highlight the health benefits

of functional foods, fostering a healthier population. The findings can be used to identify gaps in current knowledge and focus on developing new functional food products that cater to the preferences and needs of consumers from developing nations such as the Gambia

- The insights from the presentation will help the audience in their jobs by:
- **Enhanced Decision-Making:** Policymakers and public health officials can make informed decisions when designing and implementing nutrition and health programs, ensuring they are more effective and culturally appropriate
- **Improved Program Development:** Health educators and NGO workers can create more targeted and impactful educational programs and interventions, leading to better health outcomes in the communities they serve
- **Innovative Product Development:** Researchers and product developers can innovate and create functional food products that are better suited to the tastes, preferences, and nutritional needs of Gambian consumers, leading to higher acceptance and consumption rates
- **Effective Community Outreach:** Community leaders and organizations can tailor their engagement efforts to address specific misconceptions and promote the benefits of functional foods, fostering a healthier and more informed population
- Yes, since this topic is new in the Gambia and probably a big part of the region there is a huge opportunity to expand their research in this topic, such as health and nutrition policies, product development, health research, FF innovation and technology. The research identifies areas for future research to deepen understanding of FFs in the Gambian context
- Yes, the research provides recommendations and valuable insights to improve knowledge about FFs
- Yes, it provides new and valuable findings
- **Understanding of FFs:** A clear definition and explanation of what functional foods are and their potential health benefits
- **Awareness of FFs in The Gambia:** Knowledge about the current level of awareness and consumption of FFs among the population
- **Factors Influencing FF Consumption:** Insights into the demographic factors (gender, age, education, income) that impact FF consumption
- **Barriers to FF Consumption:** Identification of the main challenges hindering the wider adoption of FFs in the country
- **Opportunities for FF Development:** Potential areas for developing and promoting FFs in The Gambia based on consumer preferences

Biography

Ahmed Sheku Dabo, a dedicated scholar currently pursuing a Ph.D. in Functional Foods with a focus on Food Security and Policy. He is actively engaged in advanced research at this intersection. His professional journey as a Research Associate has finely honed his skillsets in developing research methodologies, crafting compelling proposals, and conducting thorough data analysis. He has undertaken significant research in areas such as economic development, digital agriculture, food security, food policy, and poverty reduction in developing communities. Mr. Dabo has a solid foundation Geographic Information Systems and statistical software. These attributes have positioned him well to make impactful contributions.

Aleksandra Wilczyńska[1*], Natalia Żak[1]
[1]Department of Quality Management, Gdynia Maritime University, ul. Morska 81-87, 81-225 Gdynia, Poland

The importance of testing the quality and authenticity of food products: The example of honey

The aim of our study was to review methods of honey testing in the assessment of its quality and authenticity. The quality of honey, like other food products, is multidimensional. This quality can be assessed not only on the basis of the characteristics evaluated by the consumer during purchase and consumption, but also on the basis of various physicochemical parameters. A number of research methods are used to verify the quality of honeys and to confirm their authenticity. Obligatory methods of assessing the quality of honey are usually described in legal acts. On the other hand, other, non-normative methods of honey quality assessment are used worldwide; they can be used to determine not only the elementary chemical composition of individual types of honey, but also the biological activity of honey and its components. However, so far, there has been no systematization of these methods together with a discussion of problems encountered when determining the authenticity of honeys.

The analysis of research methods allowed us to identify 16 methodological groups in the field of honey quality and authenticity. The review of methods also allowed for the extraction of parameters indicating changes not only in the quality, but also in the authenticity of the honeys, along with the interpretation of exceeding the limit values of the parameters.

Audience Take Away Notes

- We collected the information about the methods of assessing the quality and authenticity of honeys, and the problems that occur during this assessment
- Our work provides a review not only of research methods, but also of their practical use. The methodological limitations and strengths of each method have been indicated. The work can be used as a resource and a quick path to finding an appropriate research method to determine the quality and authenticity of honeys
- Our intention was to create a tool to help in selecting the most effective research methods, but also to combine several methods in order to obtain a reliable result

Biography
Aleksandra Wilczyńska, Associate Professor, Ph.D., D.Sc. Eng., is currently working as a lecturer at Gdynia Maritime University, Department of Quality Management. She received her science degree from Krakow University of Economy with speciality in quality of food stuff. She has been conducting various research and project related to quality of honey, antioxidant activity of food products and raw materials, quality of regional and traditional food and other products, pro-ecological activities in the communes of the Pomerania province and recently she has engaged in the development of macro regions, including Baltic Sea Region. She has published more than 75 research articles in SCI(E) journals.

Amel Aouache[1*], Cherifa Benlatreche[2]

[1]ENSV Ecole Nationale Superieure Vétérinaire-El Alia-Rue Issad Abbes El Alia-Algiers, 16000, Algeria

[2]Laboratory ALNUTS, Constantine University- Constantine, 25000, Algeria

Nutritional and Vitamin A status of preschool children in Constantine (East Algerian)

This study focused on assessing the nutritional and Vitamin A status of 133 children under 6 years old. Questionnaires were distributed to parents to gather information about their children and to explain the purpose of this cross-sectional survey. Parents of the selected children provided consent to participate in the study.

Our findings reveal that the combined rate of obesity and overweight is 17.3%, with a prevalence of isolated obesity at 9.8%. Vitamin A deficiency is more prevalent among obese and overweight children, affecting 43.5% of them. Only 9.61% of normal-weight children exhibit a deficiency in Vitamin A. A significant negative correlation was observed between Body Mass Index (BMI) and serum retinol levels ($r=-0.32$, $p=0.0001$).

Obese and overweight children with serum retinol levels below 0.7 µg/l, tend to consume more pastries but fewer eggs, vegetables, and fruits compared to normal-weight children without vitamin A deficiency. Their daily intakes of Vitamin A and carotenoids are the lowest.

Furthermore, a higher proportion of non-breastfed children is observed among the group of obese and overweight children with Vitamin A deficiency. Conversely, 62.80% of normal-weight children without Vitamin A deficiency received breastfeeding more than 6 months.

According to our study, Vitamin A deficiency appears to increase the risk of overweight. This public health issue, concerning the nutritional situation of children in Constantine, suggests that obesity associated with nutritional deficits is becoming increasingly prevalent in Algeria. It is necessary to develop nutritional education strategies within the population. The crucial roles of Vitamin A in health must be known. In order to prevent nutritional imbalances among Algerian children, resulting from excess or deficiencies, surveillance and prevention initiatives must be implemented.

Keywords: Preschool-Children, Overweight, Obesity, Vitamin A Deficiency, Constantine (Eastern Algeria).

Audience Take Away Notes

- The public must know the main sources of vitamin A, including animal and plant-derived (carotenoids). Adequate daily intake of vitamin A may protect against overweight, insulin resistance, and hypertriglyceridemia
- Vitamin A, recognized essential for night vision, plays various physiological roles, including the regulation of anti-inflammatory and immune functions, as well as reducing the risk of overweight. It has been recognized that the retinoic acid increases the expression of leptin (the satiety hormone)

- The findings of this research may help other researchers in Algeria and other developing countries in conducting more extensive studies on large samples to prevent and combat overweight, which continues to rise worldwide among both adults and children

Biography

Dr. Amel Alouache is a teacher at the Veterinary Superior National School (preclinic-department (ENSV) Algiers -Algeria. In 1998, she obtained a Master's degree in Applied Nutrition, from the Institute of Nutrition, Food, and Agro-Alimentary Technologies (INATAA) at the Constantine University in Algeria. She taught at Oum El Bouaghi University (Algeria) until 2009. She joined the ALNUTS Laboratory (Alimentation, Nutrition, and Health) at the Constantine University, of Professor Nezzal H., Dr. Mekhancha D.E, and Professor Benlatrche C., who was his supervisor. In 2019, she received her doctoral degree in the same field. She has published one article.

Anin Louise Anin Atchibri
Nangui Abrogoua, Cote d'Ivoire

Development and evaluation of affordable ready-to-use foods based on local ingredients for the treatment of malnutrition in Cote d'Ivoire: A preclinical study

The treatment of undernutrition requires adapted and affordable re-feeding using ready-to-use foods (RUF). The aim of this study was to evaluate the efficacy of two locally produced RUTFs (COF and CAF) on rats malnourished on the "Anagobaka" diet, using linear programming and local resources available in Côte d'Ivoire. The results show that COF and CAF have higher protein and fibre contents than Plumpy'Sup, with COF having the highest fat content. The rehabilitation phase showed significant weight gain in rats fed all diets, with no significant difference in nutritional growth parameters between groups. Biochemical analysis of the blood revealed that COF and CAF had comparable efficacy to Plumpy'Sup, with lower atherogenic indices observed in rats fed the local formulations. In conclusion, the study demonstrates that it is possible to produce effective and affordable RUFs from local ingredients, which could improve the management of malnutrition in Côte d'Ivoire.Key words: Malnutrition, Ready-to-use foods, Cashew nut, Cocoa, Wistar rats, Anagobaka

Dr. Arby Aminata Diallo
Agence Nationale de la Sécurité Sanitaire des Aliments (French Food Safety Agency), Mali/Bamako

Evaluation of the sanitary quality of sesame seeds (*Sesamum indicum*) produced, processed and sold in the Ségou region and the district of Bamako from 2018 to 2020

Sesame, one of the oilseed crops grown in Africa, brings in considerable income for producers and generates a very substantial annual resource. Despite its economic and food importance, meeting its sanitary quality and export criteria remains a challenge. In order to find solutions to these concerns, the aim of this study was to assess the sanitary quality of sesame seeds produced, processed and sold in Ségou and the District of Bamako. The study was a descriptive analytical study of the sanitary quality of sesame. The main results obtained showed that 37% of sesame seeds from wholesalers, 10.87% of samples from processors of Small and Medium-Sized Enterprises (MPE) and 6% of samples from farmers' organisations (OP) were significantly contaminated with thermo-tolerant coliforms, mainly salmonella. The highest aflatoxin content was found in the wholesaler samples (15.38 µg/Kg). Lead residue levels in the wholesaler samples were above the standard (0.3mg compared to the standard 0.2mg). The pesticides (Endosulfan A, Endosulfan B, Deltametrin, Dieldrine, Endrine, pp'DDT, Aldrine, Heptachlor, Malathion, Parathion, Op'DDT and Lindane) were all detected in the samples from OPs. In grossites, Deltametrin, Dieldrin, Endosulfan A, Endosulfan B, Endrin and pp'DDT were detected at levels exceeding standards. Future research needs to be undertaken to assess the risk associated with eating sesame seeds.

Keywords: Sesame, Microorganisms, Aflatoxins, Heavy Metals, Pesticides.

Biography

Dr. Arby Aminata Diallo holds a Doctorate in Public Health from the Institut Pédagogique Universitaire Bamako Mali. As a teacher-researcher, she holds a Master II in Bio toxicology applied to industry, the environment and health from the Université Cheick Anta Diop de Dakar in 2014. She did her university studies in Algeria at the Université Abderahamane Mira in Bejaia in 2001 to obtain an engineering degree in quality control and food analysis. In 2002, she was recruited to the civil service of Mali by the Ministry of Health in the corps of sanitary engineers in charge of water and food hygiene. In 2003, she was posted to the Agence Nationale de la Sécurité Sanitaire des Aliments, in charge of Audits and Evaluations of Agroindustrial Units. She is currently Head of the Epidemiological Surveillance Division at the Agence Nationale de Sécurité Sanitaire des Aliments, where she has published more than 10 research articles in the following journals: Mali Santé Publique 2011 Tome I N° 001, 002, 003 etc. and Revue Malienne de Science Et de Technologie-Série A: Sciences Naturelles, Agronomie, Techniques et Sciences de l'ingénieur.

Dr. Ashish Sinha
Associate Professor, Community Medicine, Pt JNM Medical College Raipur 492006, India

Impact of health seeking behavior on pulmonary TB care in Raipur district of Chhattisgarh province India: Community based study

Introduction: Health seeking behavior plays important role in early diagnosis and prompt treatment in TB care. Identification of factors influencing TB care could help in better programmatic impact and overall outcome of TB care.

Material and Methods: This cross sectional study was conducted among 262 Pulmonary TB Pt during Nov–Oct 2022. In-depth interviews were done among study subjects. After informed consent.

Results: Out of all 262 study participants interviewed mean age was 36.7±16 years; 25.39% were illiterate. Most (97.2%) participants didn't know earlier sign & symptoms of TB; 91.7% didn't know which health care facility to be accessed for the same while 85% had accustomed to visit private health facilities for common illnesses. About one third (32%) participants got appropriate treatment on 1st contact followed by 55%, 71.4%, 81.82% and 100% in subsequent contacts. (14.3%) had a fear of TB. Waiting time to access TB care at Public health facility was for 31 days (31±45 days) and 57 days (±60 days). Male, self-medication, ignorant to classical symptoms of TB were significant determinants for health seeking behavior. Participants who contacted private health facility, not aware of signs and symptoms of TB were 4 times at higher risk, adopted self-medication were 3 times, more than two consultations were 12-13 times higher risk of experiencing waiting time (≥30days) for diagnosis. [p≤0.05].

Conclusions: Poor health-seeking behavior among study subjects were observed among study subjects. The common determinants were self-medication, illiteracy, middle and lower-class status and ignorance about classic signs and symptoms.

Keywords: Pulmonary TB, Health Seeking Behavior, Impact, Waiting Time, Health Facility Contacts.

Biography

Dr. Ashish Sinha is an Associate Professor in Dept. of Community Medicine at Pt JNM Medical College Raipur. He got Graduated and Post Graduated in Pt JNM Medical College Raipur. He is also Director Medical in Sickle Cell Institute in Chhattisgarh India. He got Fellowship in Canada. He published 25 research paper in National and International Journals. He also presented 3 research papers in International Conferences. Previously He worked for World Health Organization, National AIDS Control Organization and PGIMER Chandigarh in various positions.

Babak Ghajavand* MD, Carla Avesani PhD, Peter Stenvinkel MD, PhD, Annette Bruchfeld MD, PhD
Linköping University Hospital, Sweden

Unlocking the potential of Brewers' Spent Grain: A sustainable model to use beer for better outcome in chronic kidney disease

The rising global incidence of chronic inflammatory diseases calls for innovative and sustainable medical solutions. Brewers' Spent Grain (BSG), a byproduct of beer production, presents a unique opportunity in this regard. This review explores the multifaceted health ben-efits of BSG, with a focus on managing Chronic Kidney Disease (CKD). BSG is identified as a potent prebiotic with potential as a ther-apeutic agent in CKD. We emphasize the role of gut dysbiosis in CKD and discuss how BSG could help mitigate metabolic derangements resulting from dysbiosis and CKD. Fermentation of BSG further enhances its positive impact on gut health. Incorporating fermented BSG as a key component in preventive health care could promote a more sustainable and healthier future. By optimizing the use of this typically discarded byproduct, we can align proactive health-care strategies with responsible resource management, benefiting both people and the environment.

Introduction: Let food be thy medicine and medicine be thy food" is an aphorism often attributed to Hippo-crates, which encapsulates the enduring relationship between diet and health. This relationship has gained new dimensions with advances in next-generation sequencing technologies and the concept of food as medi-cine, 1 and further deepened our understanding of the gut microbiome and its potential association with noncommu-nicable diseases such as chronic kidney disease (CKD).2 CKD prevalence is increasing and is rapidly contributing to the global disease burden. By 2040, CKD is expected to become the world's fifth leading cause of mortality.3CKD and environmental sustainability represent inter- secting challenges in global health.4 Brewers' Spent Grain (BSG), commonly viewed as a waste byproduct of beer pro- duction, offers a dual-purpose solution: it has the potential both as a dietary intervention for CKD and as a model for sustainable resource management. As kidney function de- clines, the gut assumes a greater role in waste metabolism, often leading to the unintended production of toxic by- products and a disruption of the gut microbiota.5 BSG, rich in dietary fiber and bioactive substances, emerges as a promising dietary intervention. By synthesizing emerging evidence, this narrative review elucidates the potential benefit of BSG in ameliorating dysbiosis in patients with CKD, offering a novel perspective that uniquely links CKD management to the broader objective of planetary health.

CKD and Gut Dysbiosis-A Toxic Interplay: The uremic milieu is complex and influenced by a vari-ety of factors. One of the most significant is its intricate rela-tionship with gut dysbiosis and accumulation of uremic toxins derived from the gut microbiota.6-8 the gut–kidney axis refers to the bidirectional relationship between the gut microbiota and kidney function, where changes in one can significantly impact the other. Research has shed light on this relationship in the context of CKD, particularly the role of gut bacteria in producing uremic toxins.9, 10 Studies on hemodialysis patients show that colectomized patients had lower

levels of specific uremic toxins compared to those with an intact colon.11 These findings underscore the importance of colon microbes in toxin production, a conclusion further supported by animal studies.12–14

Keywords: Brewers' Spent Grain, Chronic Kidney Disease, Fermentation, Gut Microbiota, Prebiotics, Uremic Toxins.

Dr. Christian Turra
Self-Employed, Araraquara, State of São Paulo, Brazil

Moringa oleífera against hunger

Poverty limit human development. Malnutrition, hunger and lack of opportunities prevent them to have access to basic conditions to live. About 800 milllion people suffering from hunger and more than 100 million of children are affected by malnutrition in the world. It's urgent effective actions in fighting hunger. The aims of study are to show a food with significant minerals for human beings with malnutrition and help to maintain small farms in the field. Anaemia can affect significantly the human health mainly in adolecents and adults women. Moringa oleífera is rich in iron and it can be used to combat this disease. The plant shows rapid growth and easy to propagate with capable of supplying nutrients for poor communities helping in the local sustainability. It is possible use different parts of this plant (leaves and seeds) for humans and animals feed from six months after planting depending on edaphoclimatic conditions of place. The leaves of M. oleífera has significant quantities of potassium, calcium, magnesium, cupper and Vitamins A, B, C and D. It is a good option to be used in the school lunch for poor communities in Brazil and Africa. This plant can be used in around of cities with few plants in a small space (9 - 12 m^2) or used in the agroforest system for family farmers. This action also helps against climate change.

Audience Take Away Notes

- It is a study with practical applications
- The study provides information of how to solve a problem
- The study provides practical solution of use of a plant against hunger

Biography
Christian Turra has graduation degree in agronomy at Universidade Estadual Paulista (UNESP), Jaboticabal, Brazil. He has master degree in Agroecosystems Ecology at Escola Superior de Agricultura Luiz de Queiroz (ESALQ/USP) (2005) and he has PhD degree in Chemistry in Agriculture at Centro de Energia Nuclear na Agricultura (CENA/USP) (2010). He has two post doc, one of them in Economic, Sociology and Administration area at ESALQ/USP and other in Environmental area at CENA/USP. After this, he worked as Professor at Universidade Norte do Paraná, Brazil. Currently, he is a self-employed researcher. He has published more than 20 articles.

Dr. Christian Turra
Self-Employed, Araraquara, State of São Paulo, Brazil

Daily and hypertension: An overview in Brazil

In the last decades, with the increase of Brazilian urbanization and reduced time for food preparation, there was a change in eating habits, a reduction in food quality and an increacre of some diseases. Hypertension is responsible for the majority of premature death worldwide having as its main cause the excessive consumption of sodium in foods. In this context, the aim of this study was to show as daily quality can affect people with this disease. A literature review was carried out using studies on this subject in order to improve the current understanding of daily with processed and ultra-processed foods can increase the number of people with hypertension. There are information about diet and different types of food. The studies showed that is necessary the promotion of healthy eating patterns, the practice physical activities as well as improve food education.

Audience Take Away Notes

- The study shows the importance of a good daily
- The study provides information about the importance of food education
- The study provides a practical solution to a disease

Biography
Christian Turra has graduation degree in agronomy at Universidade Estadual Paulista (UNESP), Jaboticabal, Brazil. He has master degree in Agroecosystems Ecology at Escola Superior de Agricultura Luiz de Queiroz (ESALQ/USP) (2005) and he has PhD degree in Chemistry in Agriculture at Centro de Energia Nuclear na Agricultura (CENA/USP) (2010). He has two post doc, one of them in Economic, Sociology and Administration area at ESALQ/USP and other in Environmental area at CENA/USP. After this, he worked as Professor at Universidade Norte do Paraná, Brazil. Currently, he is a self-employed researcher. He has published more than 20 articles.

D´Espósito Lourdes*, Garofalo Luciana
Dirección de Prevención, Vigilancia y Coordinación Jurisdiccional, Administración Nacional de Medicamentos, Alimentos y Tecnología Médica (ANMAT), Ciudad de Buenos Aires, Argentina

2023 integral monitoring plan: Its implementation process and relevance analysis

The Integral Monitoring Plan (IMP), established by ANMAT Regulation 10873/2017, represents the first national monitoring plan for packaged foods in Argentina. Its importance rests on the prevention of foodborne and chronic noncommunicable diseases, which encompass a wide range of pathological entities and entail a growing public health problem at world level. Within this framework, it becomes critical to implement nationwide strategies to fight and reduce their impact. In 2022, it was decided that the IMP should be redesigned and relaunched on the basis of joint work with the provinces that signed up to the Plan voluntarily. This article aimed at describing the development process of the federal programs included in the Plan for the year 2023. The aspects to be considered when implementing a federal strategy for monitoring foods and manufacturing establishments were addressed, with consideration of their impact on public health and the particular aspects of the various provinces in the country, in order to put forward achievable objectives at national level.

Based on the assessment, it is to be mentioned that the Integral Monitoring Plan stands as an essential strategy to agree on criteria and ways of working among the provinces, within a federal framework. And, furthermore, all the programs address topics on the prevention of diseases relevant to protect public health and hold a legal framework to support their objectives and activities.

Audience Take Away Notes

- Food surveillance
- Food fraud
- Chronic noncommunicable diseases
- Foodborne diseases
- Disease prevention

Biography
Lourdes D´Espósito, studied food engineering at the Argentine Catholic University and completed a specialization in food science at the University of Buenos Aires. She began working in the National Administration of Drugs, Food, and Medical Devices (ANMAT) at the National Institute of Food in 2005. Lourdes D´Espósito worked for several years in the National Reference Laboratory and since 2020 is in charge of the Office of Prevention, Surveillance and Jurisdictional Coordination. Luciana Garofalo holds a Food Engineering degree from National University of Quilmes. She took part in an exchange program at University of Malaga to study Industrial Organization, and completed a Food Security and Safety residency program at the National Institute of Food under the National Administration of Drugs, Food and Medical Devices (ANMAT). At present, she is Chief Resident of the Food Security and Safety residency program and works at the Department of Prevention and Promotion of Food Health of ANMAT.

Davide Frumento
Department of Pharmacy, University of Genova, Genova, Liguria, Italy

Fortification of a *Lactobacillus acidophilus* fermented milk with *Vitis vinifera* marc flour

Some wine industry by-products still contain both functional compounds and nutrients, making them potential material to be employed in new high value-added food products formulation. Our aim was to develop a *Lactobacillus acidophilus* fermented milk, fortified with marc flour belonging to different cultivars of Vitis vinifera coming from wine production. We evaluated their influence on fermentation kinetics, probiotic counts, phenolic compounds, sugar content and antioxidant activity. Interestingly, acidification time was shortened by these enrichments (by up to 2.7 h), and the cold storage bacterial count resulted in stronger fortification of samples (up to 4.13%), if compared to control tests. Grape marc containing-fermented milk showed considerable phenolic compounds amounts with notable antioxidant activity, as well as significant contents of total sugars. The most important aspect of this study is the demonstration of the winery by-products use feasibility, thus employing phenolic compounds rich material as natural supplement to fortify probiotic-fermented milk.

Audience Take Away Notes

- New technology to be used in dairy research/industry
- Dairy research will be provided with ready-to-use data
- This research can be used by every Food Science Researcher and Professor
- We are providing a brand-new concept, to be applied in nutraceuticals development

Biography

He started his postdoctoral research under the mentorship of Prof. Paolo Fiorina at Biosciences Department, University of Milan (Milan, Italy), in collaboration with Nephrology Division, Boston Children's Hospital, Harvard Medical School (MA, USA). He earned first-authorship and co-authorship statuses on the resultant peer-reviewed papers. His work in research continued under the guidance of Prof. Claudio Viscoli at the Health Sciences Department, University of Genoa (Genoa, Italy), conducting research about antiretrovirals compliance in HIV patients and new generation anti-HCV drugs efficacy. He also have been appointed as a Coordinator for a clinical trial titled "Safety, tolerability & efficacy on LDL-C of Evolocumab in subjects with HIV & hyperlipidemia/mixed dyslipidemia" (Amgen Inc. 20130286 - AMG286 trial). He continued his work under the guidance of Prof. Santina Bruzzone at the Department of Experimental Medicine, University of Genoa (Genoa, Italy), investigating the onset delay effect of SIRT6 inhibition on in vitro/in vivo Multiple Sclerosis models, earning a co-authorship in the resultant peer-review article. He then conducted research on anti-influenza and anti-meningococcal vaccination strategy under the guidance of Prof. Donatella Panatto at Health Sciences Department, University of Genoa (Genoa, Italy), earning a co-authorship in the resultant peer-review articles [4,5]. He was then employed at the Department of Pharmacy, University of Genoa (Genoa, Italy), under the mentorship of Prof. Silvia Schenone, working on Organic Synthesis research, characterizing pyrazolo[3,4-d] pyrimidine tyrosine kinase inhibitors (TKIs). He published a work about it. Later, he was appointed as Adjunct Professor in Epigenetics at the Education Sciences Department, RomaTre University (Rome, Italy), lecturing post-graduate students and working on generational trauma along with Prof. Matteo Villanova. Such research work resulted in a research article as a first author.

Diana Catalina Castro Rodríguez
Investigadora, CONAHCYT. Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, Mexico

Beneficial effects of probiotics in the different stages of life: From gestation to aging

With the accelerated pace of modern life, driven by the quest for greater comfort, diseases have also increased in the population. This makes it seem difficult to achieve the goal of total wellness for our civilization, and may even make us think that this is an unattainable goal. Human beings experience a wide variety of ailments such as diabetes, obesity or cancer, which significantly diminish their quality of life. These diseases have not only become personal problems, but have also increased in number, becoming a public health problem. Recent studies show that not only genetic factors are strongly associated with these diseases, but also diet and its impact on the intestinal microbiota have a significant influence on their development. Dietary habits can alter the intestinal microbiota, affecting its functionality and leading to drastic changes in energy generation and utilization, predisposing to the development of chronic degenerative diseases. Nutritional imbalance during the early stages of development alters metabolism, intestinal physiology and the composition of the microbiota, which negatively affects the overall health of individuals and becomes an important element for the development of a country. Therefore, implementing lifestyle modifications can prevent the adverse effects caused by poor nutrition during the development of each individual. One of these modifications could be the consumption of probiotics, microorganisms that stimulate the protective functions of the digestive tract and, when ingested in sufficient quantities, exert a beneficial action on the health of the host. Probiotics stand out for several characteristics, among the most important are their nutritional contribution, their ability to maintain a healthy intestinal microbiota, the attenuation of lactose intolerance, their improvement of gastric health, their ability to assist in antibiotic treatments, the reduction of respiratory infections and their ability to reduce serum cholesterol. In addition, in recent years, their contribution to the improvement of metabolic and immunological alterations associated with obesity has been demonstrated, which makes them a subject of great interest. Although numerous studies have been conducted to understand the relationship between probiotics, the microbiota and various diseases, it is still uncertain how probiotics act on the physiology of the individual. To achieve a more complete understanding of the probiotic effect on health, more research is needed that focuses on determining the functionality of probiotics on the microbiota, as well as understanding the relationship of the microbiota to the development or prevention of major diseases such as obesity or cancer.

Audience Take Away Notes

- Importance of adequate nutrition in early stages of development such as pregnancy and lactation
- Beneficial effects of the use of probiotics
- Characterization of bacteria with probiotic potential

Biography

Dr. Diana C. Castro Rodríguez has PhD in Science in Bioprocesses. She is currently a young researcher from CONACYT. She has carried out two research stays, one at the Institute of Agrochemistry and Food Technology, Valencia, Spain and another at Texas Biomedical Research Institute and Southwest National Primate Research Center, San Antonio, United States. She has three patent application records. She has been awarded honorable mentions for her work in both the Master's and PhD. Her line of research is aimed at the bio-synthesis of the secondary metabolites of probiotic and their effects in chronic degenerative diseases.

Rinaldo D.[1*], Sotin H.[2], Le Quéré J.M.[2], Le-Bail G.[2], Gacel A.[2], Pétro D.[1], Guyot S.[2]

[1]INRAE, UR 1321 ASTRO, Domaine de Duclos, F-97170, Petit-Bourg, Guadeloupe
[2]INRAE, PRP Team, UR 1268 BIA, Domaine de la Motte, F-35653, Le Rheu, France

Browning susceptibility due to cutting and cooking in new hybrids of water yam (*Dioscorea alata*) as related to their total phenolic content, phenolic profile and polyphenol oxidase activity

Yam is a major staple food which provides both energy and bioactive compounds. In the French West Indies, over the past ten years, yam production declined by 70%, which was partly due to a fungal disease leaf anthracnose. New hybrids of *Dioscorea alata* resistant to anthracnose were created but some of them have quality flaws. Some hybrids are susceptible to browning when cut and all of them show an extra change in color after cooking. Regarding cutting, the new hybrids exhibited contrasted susceptibility to browning in relation to their total phenolic content (r=0.91). The detailed polyphenol profiles of INRA15, highly susceptible to browning, and of Kabusah, with moderate susceptibility to this flaw, were achieved by HPLC coupled to UV-Visible and mass spectrometry. For the first time, total procyanidins of yam were finely characterized and quantified using HPLC after phloroglucinolysis, revealing that those compounds are by far the main polyphenols in the two cultivars. Differences in terms of browning susceptibilities of the two cultivars are clearly explained by their contrasted polyphenol profiles:-
(i) absence versus presence of catechin which is a well-known substrate of polyphenol oxidase (PPO)
(ii) significant differences in procyanidin levels and in their average degree of polymerization potentially involved in PPO inhibition

Regarding cooking darkening, it is highly undesirable in potatoes but has not been previously reported in yam. We determined the influence of boiling on color attributes, total phenolic content, phenolic profile (LC-UV-MS) and polyphenol oxidase activity in three varieties of yam. Boiling during 22 min led to darkening in all varieties. It also induced an average 42% decrease in the total phenolics, flavanols and total procyanidins contents of the pulp without any significant modification in the structure of procyanidins. The decrease in the contents of phenolic compounds after cooking could be partly due to oxidation. Polyphenol oxidase activity was the highest in INRA15 and was inhibited only after 11 min in boiling water when the temperature of the core of the pulp attained 60 °C. Cooling at ambient temperature during one hour induced an increase in L* value and no significant change in total phenolic content. For the first time, the phenolic profile of flavanols and the polyphenol oxidase activity in the pulp of yam were determined sequentially throughout cooking. Cooking darkening in yam occurs during boiling and not during the cooling period after boiling, unlike what was reported in potatoes.

Keywords: Yam, Susceptibility to Browning, Phenolic Profile, Enzymatic Oxidation, Polyphenols, Oxidation, Apple, Cider, Mass Spectrometry.

Biography

Dr. Dominique Rinaldo after studying to become an agricultural engineer, she took a PhD degree in Animal physiology at Rennes University (France). In 1991, she came to Guadeloupe and was recruited at INRAe where she has studied heat resistance and meat quality in growing pigs until 2004. Since, she has been working on the organoleptic, nutritional and functional qualities of starchy tropical food products. First, she has examined the influence of biotic and abiotic stresses on banana quality for about ten years. Since 2015, she has been focusing on qualities of root crops, mainly yam, with a particular interest in processing ability.

Dr. Sylvain Guyot Sylvain Guyot is currently Director of Research at INRAE (French National Institute for Agriculture, Food and Environment) in Le Rheu, France. He obtained his doctorate in biochemistry in 1994 and his HDR (Accreditation to supervise research) in 2006. He is currently head of the Polyphenols, Reactivity & Processes team in the BIA (Biopolymers, Interactions and Assemblies) Research Unit. He's also scientific co-leader of the P2M2 Mass Spectrometry Analytical Platform. He has over 30 years' research experience in the field of plant phenolic compounds and their biochemical and chemical reactivity during food processing. He has particular expertise in polyphenols in cider production. He is currently the author of over 100 publications in peer-reviewed journals, with an h-index of 38.

Federico Bianchi[1*], Valeria Santoro[2], Anna Lisa Piccinelli[2], Barbara Simonato[1]

[1]Department of Biotechnology, University of Verona, Verona, Italy

[2]Department of Pharmacy, University of Salerno, Fisciano, Italy

Red chicory by-product as a functional ingredient for fresh pasta fortification: Effects on technological features and of bioactive compounds bio-accessibility

Pasta is a staple food that plays a pivotal role in nutrition worldwide. However, pasta is rich in carbohydrates and lacks vitamins, minerals, and dietary fiber. The addition of ingredients of high-added value can enhance its functionality. In recent years, in the frame of sustainability, many ingredients obtained from agro-industrial by-products have been recovered and upcycled as a source of bioactive compounds to enhance pasta's nutritional and healthy properties.

Red Chicory (Cichorium intybus L.) is a perennial herbaceous plant of the Asteraceae family. In the northeastern Italian region (Veneto), the most extensive red chicory (locally called radicchio) plantations are present, which annually generate tons of by-products. Red chicory is rich in bioactive compounds like dietary fiber, polyphenols, and sesquiterpene derivatives, with several positive health effects. Dietary fibers could contribute to various physiological effects, including decreased intestinal transit time, lower total and LDL cholesterol levels, reduced postprandial blood glucose and insulin levels, and preventing constipation. Polyphenols have been suggested to exert several biological activities, including antioxidant, anti-inflammatory, and anti-microbial. In addition, phenolic compounds can modulate starch digestibility by directly inhibiting alpha-glycosidase digestive enzymes or forming complexes with starch. Moreover, sesquiterpene lactones, the compounds responsible for the bitter taste of Cichorium species, may play a highly significant role in human health, both as part of a balanced diet and as nutraceuticals, due to their potential for the treatment of cardiovascular disease and cancer. Therefore, red chicory by-products could be upcycled and transformed into an ingredient to improve pasta foodstuffs.

In this study, we formulated fortified pasta by replacing semolina with 5%, 10%, and 15% dried red chicory by-product powder, rich in fiber (27%) and healthy bioactive compounds (4.3%). We characterized the bioactive compounds of red chicory by UHPLC-DAD HRMS, which indicated hydroxycinnamic acids, flavonoids, anthocyanins, and sesquiterpene lactones as the main bioactive compounds and the fortified pasta phenolic content. Moreover, we studied the fate of the bioactive compounds in pasta samples after simulated gastrointestinal digestion.

The addition of red chicory influenced the pasta's technological properties by inducing a slight increase in cooking loss, fully cooked time, and decreased swelling index. The texture analysis showed that firmness and adhesiveness increased in the fortified sample. The in vitro starch digestibility and the evaluation of fortified pasta glycemic index were also assessed. The sensory characterization showed a vegetable and bitter flavor perception with increasing fortification levels. Even though red chicory modifies some pasta

properties, the panelists trained for the quantitative descriptive analyses rated the red chicory-enriched pasta samples positively. In conclusion, red chicory could constitute an intriguing ingredient for producing functional pasta with antioxidant compounds and dietary fiber, potentially contributing to positive effects on human health and enhancing the economic value of the radicchio food chain by reusing this by-product.

Audience Take Away Notes

- The importance of recovery of agroindustry by-products to formulate functional foods
- The interaction of nutrients (protein/starch) and bioactive compounds could hinder their recovery and lower the bio-accessibility
- The red chicory can alter some technological properties of pasta
- Formulation of functional ingredients of high added value from agro-industry products such as red chicory by-product

Biography

Federico Bianchi studied Biotechnology at the University of Verona, Italy, and graduated as a master's student in 2019. Then, he joined Prof. Barbara Simonato's team with a two-year research scholarship and worked on a project involved in the reutilization of agroindustry by-product. He has been a PhD visiting student at Aarhus university for 6 months and currently is in his last year of PhD in Biotechnology at the University of Verona.

Haider A. J. Al Lawati[1*], Zakeiy Al Hashmi[1], Javad Hassanzadeh[1], Ali Saleh Al Forqani[2], Ahmed Al Fahdi[2], FakhrEldin O. Suliman[2], Ghanim Aalthani[3]

[1]Department of Chemistry, College of Science, Sultan Qaboos University, Box 36, Al-Khod, 123, Sultanate of Oman

[2]Royal Court Affair, Sultanate of Oman

[3]University of Nizwa, Sultanate of Oman

Chemical analysis directing strategic planning for producing high quality olive oil- Case study

Due to the economic value and health impact of olive oil, many non-Mediterranean countries are trying to cultivate olive trees. However, this is challenging, as the proper climate condition play an important role in producing olive that has a high quality oil. Oman is one of the Arab Gulf countries that started cultivating olives about two decades ago in Jabal AL Akhadar (JA). JA is located at an altitude of 2000-3000 m above sea level and the climate there is similar to the Mediterranean countries. The relative humidity in 2023 ranged from 30.7% to 67.9%, and the range of air and ground temperature was (7.4-23.0)°C and (7.9-23.7)°C respectively. Today the total number of olive trees is more than 25000, distributed on little more than 36 hectares of land. The cultivars used are originated from various countries such Greece, Croatia, Egypt, Portugal and Spain. In 2019, about sixty tons of olives were harvested from which about 8,000 liters of oil were produced. The Sultanate of Oman government is planning to expand olive growing in JA by introducing suitable cultivars with high quality oil. However, it is well established that part of the health impact of olive oil is due to the richness in phenolic compounds. It is also known, that olive oil contains some specific phenolic compound that have therapeutic effect such as oleocanthal, Oleocanthal, Hydroxytyrosol and Tyrosol (OHTs). On the other hand, the concentration of all phenolic compounds in olive oil is significantly affected by climate, soil and environment conditions. In this project, we are aiming to evaluate various types of olive oils produced in JA in terms of the concentration of OHTs. This will help in directing the production toward the best type of olive oil in terms of economic and health impact.

Six varieties of olive oil samples were evaluated and analysed. These varieties are Arbequina, Picual, Carotina, Kalamata, Karonaki, and Dolce. These varieties were selected because of the good oil yield. All oil samples were collected from a governmental farm called Riyad Al Jabal. This farm is under the administration of the Royal Court Affair, Sultanate of Oman. The olive trees in this farm were planted in January 2010 and treated similarly. The olive from each variety was collected at an appropriate time with 50% maturity. After the extraction process, the sample was transferred to SQU and stored in darkness. The analysis of the samples was done within 15 days to ensure the freshness of the analyzed samples. Initially, routine analysis was conducted such as the content of free fatty acids and peroxide value. All oils varaieties were below the allowable limits. The analysis of the extracted oil was further carried out using HPLC and LC-MS/MS technique for quantitative determination of OHTs. The method showed strong linear relationships the peak area and the concentration of the analytes. The correlation coefficients between 0.978 and 0.999, indicating its reliability for quantifying the targeted compounds. The result revealed that certain olive oil varieties like Carotina (180.1±0.1) mg per kg-1, Kalamata (138.44±0.09) mg per kg-1 and Picual (107.7±0.3) mg per kg-1 exhibit higher total concentration of OHTs, making them favorable choices for cultivation in JA. In addition, the Folin-Ciocalteu reagent method was utilized in the study to estimate the total phenolic content of olive oil extracts using gallic acid as tandard. Results indicated varying levels of phenolic compounds among different olive oil varieties, with Picual (254.6±6.1) mg per kg-1 and Carotina (240.6±5.6) mg per kg-1 demonstrating the highest content. Based on these finding, the Government distributed 200 seedlings of the selected varieties aiming to produce a higher quality of olive oil.

Audience Take Away Notes

- Chemical analysis can be utilized for directing strategic planning
- The olive oil quality varies significantly from variety to another depending on genetics and environmental conditions
- Determination of total phenolic content is an important parameter that should be added to the standard parameters of checking the quality of olive oil

Biography

Haider A. J. Al Lawati has received his PhD in analytical chemistry from University of Hull, UK in 2007. Currently, he is employed at the Department of Chemistry, Faculty of Science of the Sultan Qaboos University, Sultanate of Oman, as a professor. His research interests are focused on microfluidics, chemiluminescence, miniaturized analytical systems, chromatography and mass spectrometry

Mrs. Hanaa Amiirah Sohawon-Soreefan
Nutritionist-Dietitian at Private Practice. Port-Louis, Mauritius

Dietary guidelines and meal planning for the diabetic patient during Ramadan

According to the NCD Survey 2021, in Mauritius 20% of the 1.3 million people suffers from Type 2 diabetes. This represents at least one diabetic or pre-diabetic person in every Mauritian household. The aim of this study is to raise awareness among diabetic patients on how to plan their meals for a good glycaemic control, especially among those who fast for the month of Ramadan. Fasting can cause both hypoglycaemia and hyperglycaemia in the diabetic patient if he does not know what to eat during Ramadan. The study was conducted among 300 diabetic patients, both males and females equally, aged between 25-65 years old via an anonymous, survey-based questionnaire. Amongst other data, blood test results which included fasting blood glucose and HbA1c were recorded for each patient. The study showed that patients who followed the Ramadan healthy meal plan showed better fasting blood glucose readings and HbA1c results, as opposed to those who did not follow the meal plan. Positive health outcomes such as healthy weight loss and good glycaemic control were also observed among obese and overweight diabetic patients. Consequently, if diabetic patients follow the dietary guidelines given by a dietitian, together with medications prescribed by their treating diabetologist, they can safely fast for Ramadan, without falling into either hypoglycaemia and hyperglycaemia.

Audience Take Away Notes

- The audience will learn how to plan a meal for the diabetic patient during Ramadan
- To better assist the diabetic patient while he is fasting
- Yes, this research that other faculty could use to expand their research or teaching
- Yes, this provides a practical solution to a problem that could simplify or make a designer's job more efficient
- Yes, it improves the accuracy of a design, or provide new information to assist in a design problem
- Not many dietitians have conducted studies among their patients during Ramadan. So this study will help other dietitians and healthcare professionals in better understanding Ramadan and meal planning for the diabetic patient

Biography

Hanaa Amiirah Sohawon-Soreefan holds a BSc (Hons) Nutritional Sciences (with Specialisation in Dietetics) and also possess an MSc in Public Health. She has been working as Nutritionist-Dietitian at Naturhouse Dietetic Centre since the past 10 years. She is a member of the World Public Health Nutrition Association. She also an Editorial Board member for the Journal of Nutritional Dietetics & Probiotics (JNDPS). She has published two articles in the Asian Academic Research Journal of Multidisciplinary and in the Journal of Nutritional Dietetics & Probiotics. Her research interested in are public health nutrition, diet-diseases relationship and malnutrition.

Dr. Hema Kesa
Food Evolution Research Laboratory, School of Tourism and Hospitality, University of Johannesburg, Gauteng, South Africa

Assessing the dietary impact of COVID-19 on in-school nutrition programmes in South Africa

Background: During a child's formative years, access to adequate food and proper nutrition is paramount. Optimal nutrition serves as the foundation for their physical growth, cognitive development and overall wellbeing. The COVID-19 pandemic however exacerbated food insecurity and significantly disrupted the ability of schools to regularly feed children.

Aims: To objectively assess the impact of COVID-19 on the in-school nutrition programmes in four South African provinces and to evaluate the food costs per meal versus the quality and quantity of food being served to the children.

Setting: Cross-sectional survey of three schools per Province in four South African provinces namely – Gauteng, Western Cape, Northwest, and Kwazulu-Natal.

Methodology: Districts and schools were randomly selected from a list provided by the Tigerbrands Foundation (TBF). Data was collected from April to May 2022. A qualitative approach which employed the use of interviews at selected schools, was used in this study. In each school, a Principal, a Teacher, and a Food handler were interviewed using three different questionnaires. The interviews were transcribed, and the data analyzed with the use of ATLAS.ti software version 22.0.

Results: The meal cost per learner per day varies between R3.02-R3.52 only. The interviews reported that the in-school nutrition programmes have added value to the schools/communities despite the quality and quantity of food being served. It was reported that the schools offered less variety, less fruit and proteins, and the portions were not enough to fill the children. The food quality was without flavor, and sometimes not prepared well. Regarding meal preferences, 'Jungle oats' and 'rice with fish' were the most preferred breakfast and lunch meals, respectively. The most disliked breakfast was mabele instant porridge while the most disliked lunch was soya mince.

Conclusion/Recommendations: Both TBF and NSNP feeding programmes have recorded positive impacts on the communities. For better results, more spices/flavours should be added to some of the foods (like the soya mince) to make them more appealing. This will help in reducing food wastes and further improve the nutritional status of the school-fed children.

Keywords: In-School Nutrition, Feeding Programmes, Impact Assessment, South Africa.

Audience Take Away Notes

- Gain a better understanding of School Nutrition Programmes in South Africa
- Prepare he audience on how to deal with similar situations during future pandemics
- This study provides practical solutions in the improvement of School feeding programmes
- Understanding food security in schools

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.

Dr. Hemavathy Subramaiam[1*], Wan-Loy Chu[2], Ammu Kutty Radhakrishnan[3], Srikumar Chakravarthi[4], Kanga Rani Selvaduray[5], Yih-Yih Kok[6]

[1]School of Medicine, International Medical University, Kuala Lumpur, Malaysia
[2]School of Postgraduate Studies, International Medical University, Kuala Lumpur, Malaysia

[3]Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Bandar Sunway, Malaysia
[4]Faculty of Medicine, Bioscience and Nursing, MAHSA University, Bandar Saujana Putra, Malaysia
[5]Product Development and Advisory Services Division, Malaysian Palm Oil Board
Bandar Baru Bangi, Malaysia
[6]School of Health Sciences, International Medical University, Kuala Lumpur, Malaysia

Supplementation of *Spirulina* (=arthrospira) platensis induces immunosuppression through increasing T-regulatory cells in a syngeneic mouse model of Breast Cancer

Spirulina (=Arthrospira) platensis has been reported to have several health-enhancing activities. To date, the anticancer and immunomodulatory effects of Spirulina platensis against Breast Cancer (BC) in an experimental model have not been fully explored. The aim of this study was to assess the anticancer and immunomodulatory effects of *Spirulina* (=Arthrospira) platensis against BC in a syngeneic mouse model of BC using two approaches (1) simultaneous treatment and (2) early treatment models. The simultaneous treatment model evaluated the effect of feeding Spirulina at the time of tumor induction to investigate if this can inhibit tumor growth and metastasis. The aim of the early treatment model was to study if feeding the mice with *Spirulina* daily for two weeks prior to tumor induction can prevent the onset, growth and spread of the BC. In both models, the total duration of Spirulina supplementation was 28 days. There were no differences in body weight ($p>0.05$) and tumor volume ($p>0.05$) between the simultaneous and early treatments. However, a marked increase ($p<0.05$) in the T-regulatory (Treg) population was observed in mice from the simultaneous treatment groups compared to control animals. The findings suggest that Spirulina feeding may induce an immunosuppressive environment in the tumor-induced animal, which may work through increasing their Treg populations, thereby suppressing the host's immune response to the tumor.

Nutraceuticals such as Spirulina have been widely used by humans as a supplement. It will be beneficial to know if it can also be therapeutic against breast cancer as it is one of the leading cause of death amongst women. This work could be extended to understand the mechanism of action of Spirulina against breast cancer.

Biography

Dr. Hemavathy did her MSc studies at the Immunology unit, Faculty of Medicine and Health Sciences, University Putra Malaysia and graduated with MSc in Immunobiology in 2011. She then joined as a lecturer at the International Medical University, Malaysia. She enrolled as a PhD candidate at the same university, while teaching and graduated with a PhD in Medical and Health Sciences in 2018.

Iftikhar Ali Khan[1,2*], Asad Khan[3], Mehreen Akhtar[1], Muhammad Nawaz[1], Samavia Farrukh[1]

[1]Institute for Advanced Study, Shenzhen University, Shenzhen, Guangdong, 518060, China

[2]Easternalong Pharmaceutical Co., Ltd, No. 66, Taoyuan east Road, Foshan, Guangdong, 528200 China

[3]College of Veterinary Medicine, Sichuan Agricultural University, Chengdu, Sichuan, 611130, China

Flavonoid derivatives formed from inhibition of harmful maillard product formation in thermally-processed foods: Potential benefits and health risks

The Maillard reaction, which occurs during the thermal processing of foods, generates desirable flavor and aroma compounds. Unfortunately, this reaction is often accompanied by undesirable reactions that yield various harmful Maillard products such as Heterocyclic Amines (HAs), Acrylamides (AA) and Advance Glycation End products (AGEs). Flavonoids, particularly those with meta-phenol structures such as quercetin, genistein, catechin, and epicatechin, have shown significant inhibitory effects against the formation of these harmful Maillard products. Moreover, these flavonoids have been found to effectively scavenge Methylglyoxal (MGO), phenylacetaldehyde and 3-oxopropanamide forming flavonoid-MGO, flavonoid-phenylacetaldehyde and flavonoid-propanamide adducts, respectively. These adducts exhibit various beneficial bioactivities, including the suppression of colon cancer cells, reduction of Hepatocellular Carcinoma (HCC) cell viability, inhibition of cell migration, and suppression of epithelial-mesenchymal transition. However, due to the limited bioavailability of flavonoids and the significant degradation of dietary flavonoids by gut microorganisms before absorption by intestinal endothelial cells, flavonoid adducts have limited potential as direct therapeutic agents. Nonetheless, they serve as valuable biochemical probes for research purposes.

Audience Take Away Notes

- **Mechanisms of the Maillard Reaction:** An in-depth understanding of how the Maillard reaction generates both desirable flavor compounds and harmful byproducts during the thermal processing of foods
- **Health Implications:** Insights into the specific harmful Maillard products such as Heterocyclic Amines (HAs), Acrylamides (AA), and Advanced Glycation End Products (AGEs), and their potential health risks
- Role of Flavonoids: Detailed information on how flavonoids, especially those with meta-phenol structures like quercetin, genistein, catechin, and epicatechin, inhibit the formation of harmful Maillard products
- **Bioactive Adducts:** Knowledge about the formation of beneficial flavonoid-MGO, flavonoid-phenylacetaldehyde, and flavonoid-propanamide adducts and their various bioactivities, including cancer cell suppression and inhibition of cell migration
- **Challenges and Opportunities:** An understanding of the limitations of using flavonoids as direct therapeutic agents due to their limited bioavailability and degradation by gut microorganisms, along with the potential of flavonoid adducts as valuable biochemical probes for further research
- This presentation aims to bridge the gap between food science and health implications, providing new insights into the potential applications and challenges of flavonoids in food processing and disease prevention

- **Food Industry Application:** Food scientists and technologists can apply the knowledge of how flavonoids inhibit harmful Maillard products to develop healthier food processing methods. This can lead to the creation of food products with reduced levels of harmful compounds, enhancing food safety and nutritional quality
- **Nutritional Science and Dietetics:** Nutritionists and dietitians can leverage the understanding of the health impacts of Maillard reaction products and the protective role of flavonoids to make more informed dietary recommendations. They can guide consumers on incorporating flavonoid-rich foods into their diets to potentially mitigate the effects of harmful Maillard byproducts
- **Medical and Pharmaceutical Research:** Researchers can use the insights into the bioactive properties of flavonoid adducts to explore new therapeutic avenues. Although direct therapeutic use is limited, the adducts' ability to suppress cancer cells and inhibit cell migration can inform the development of novel cancer treatment strategies
- **Public Health Policy:** Public health professionals can utilize the information to advocate for food processing regulations that minimize the formation of harmful Maillard products. This can lead to improved public health outcomes through better food safety standards.
- **Academic Research:** Scholars and students in food science and technology can use the presented research as a foundation for further studies. They can explore new ways to enhance the bioavailability of flavonoids or develop innovative methods to prevent the degradation of flavonoids in the gut, maximizing their health benefits
- By applying the knowledge gained from this presentation, the audience can enhance their professional practices, contribute to scientific and health advancements, and drive innovation in their respective fields
- **Food Scientists and Technologists:** Gaining insights into the inhibition of harmful Maillard products will enable them to develop safer and healthier food processing techniques. This knowledge can lead to innovations in food formulation, enhancing product quality and safety, which can be a significant competitive advantage in the food industry
- **Nutritionists and Dietitians:** Understanding the role of flavonoids in mitigating the effects of harmful Maillard reaction products allows them to provide better dietary advice. They can recommend foods rich in specific flavonoids to their clients, potentially reducing the risk of diseases associated with harmful Maillard products.
- **Medical and Pharmaceutical Researchers:** The information on flavonoid adducts' bioactivities offers new research directions for developing cancer therapies and other treatments. This could lead to breakthroughs in understanding disease mechanisms and creating novel therapeutic agents, enhancing their research portfolio and contributions to medical science
- **Public Health Professionals:** Armed with knowledge about the risks of harmful Maillard products and the protective effects of flavonoids, they can advocate for better food safety regulations and public health policies. This can result in improved public health outcomes and safer food standards, aligning with their mission to protect and promote community health
- **Academics and Students:** For those in academia, this presentation provides a rich source of information and potential research topics. Understanding the complex interactions between food components and health can inspire new studies and collaborations, leading to advancements in food science and technology
- **Food Industry Stakeholders:** Professionals involved in food production, quality control, and product development will find the insights valuable for creating products that meet consumer demands for health and safety. This can improve brand reputation and consumer trust, driving business success.
- **Inhibitory Mechanisms:** Faculty members can explore the mechanisms by which flavonoids inhibit the formation of harmful Maillard products, potentially leading to the development of novel food processing techniques or dietary interventions

- **Bioactivity Studies:** The beneficial bioactivities of flavonoid adducts against various cancer cells can be a foundation for further research into cancer prevention and treatment
- **Gut Microbiota Interactions:** Researchers can investigate the interaction between flavonoids and gut microbiota, aiming to enhance flavonoid bioavailability and stability
- **Teaching Material:**
- **Food Chemistry Courses:** This research provides a real-world example of the Maillard reaction and its dual nature, serving as a case study for discussions on food chemistry and safety
- **Nutritional Science:** The role of flavonoids in mitigating harmful compounds can be incorporated into lectures on functional foods and nutraceuticals
- **Cancer Biology:** The anti-cancer properties of flavonoid adducts can be included in courses focused on cancer biology and therapeutic strategies
- Food Product Development:
- **Safer Food Products:** By understanding the inhibitory effects of flavonoids on harmful Maillard products, food designers can develop safer and healthier food products. Incorporating specific flavonoids during the formulation process can reduce the levels of undesirable compounds such as heterocyclic amines and acrylamides
- **Flavor Enhancement:** Knowledge about the desirable flavor and aroma compounds generated during the Maillard reaction can help designers create products with enhanced sensory qualities while minimizing harmful byproducts.
- **Functional Foods and Nutraceuticals:**
- **Enhanced Nutritional Profiles:** Designers can create functional foods fortified with flavonoids to provide additional health benefits, such as anti-cancer properties, making these products more attractive to health-conscious consumers
- **Innovative Ingredients:** The formation of flavonoid adducts with beneficial bioactivities can lead to the development of new ingredients for use in functional foods and nutraceuticals
- **Food Safety and Quality Control:**
- **Improved Processing Techniques:** The insights gained from this research can guide the optimization of thermal processing techniques to minimize the formation of harmful compounds, ensuring higher food safety and quality
- **Ingredient Selection:** Designers can choose ingredients based on their flavonoid content and structure, leading to the creation of products that naturally inhibit harmful Maillard reactions
- **Targeted Formulation:** By understanding the specific flavonoids (e.g., quercetin, genistein, catechin, and epicatechin) that inhibit harmful Maillard products, food designers can accurately formulate products with precise amounts of these compounds to achieve the desired inhibitory effects
- **Predictive Models:** This research can contribute to developing predictive models that estimate the formation of harmful Maillard products based on processing conditions and ingredient compositions. This allows designers to make data-driven decisions to optimize product safety and quality
- **Providing New Information:**
- **Bioavailability and Stability:** Insights into the limited bioavailability and degradation of dietary flavonoids by gut microorganisms can inform the development of strategies to enhance flavonoid stability and absorption, such as encapsulation techniques or the use of prebiotics and probiotics.
- **Adduct Bioactivities:** The discovery of the beneficial bioactivities of flavonoid-MGO, flavonoid-phenylacetaldehyde, and flavonoid-propanamide adducts provides new information that can be leveraged to design functional foods with specific health benefits, such as anti-cancer properties
- **Thermal Processing Optimization:** Understanding the conditions that favor the formation of beneficial versus harmful Maillard products can guide the optimization of thermal processing techniques, leading to safer and higher-quality food products
- **Assisting in Design Problems:**
- **Ingredient Selection and Processing:** This research provides a scientific basis for selecting

ingredients and processing methods that minimize harmful Maillard reactions while preserving or enhancing desirable sensory properties. This can help solve common design problems related to balancing safety, nutrition, and flavor

- **Innovative Product Development:** The ability to form beneficial flavonoid adducts opens up new avenues for product innovation, allowing designers to create novel functional foods and nutraceuticals with targeted health benefits
- **Health Promotion:**
- **Chronic Disease Prevention:** The inhibitory effects of flavonoids on harmful Maillard products and their potential anti-cancer properties can contribute to the prevention of chronic diseases such as cancer, diabetes, and cardiovascular diseases
- **Antioxidant Properties:** Flavonoids are known for their antioxidant properties, which can help reduce oxidative stress and inflammation in the body, promoting overall health
- **Consumer Trust and Marketability:**
- **Cleaner Labels:** Products formulated with natural flavonoids and reduced harmful compounds can be marketed as clean label or healthier options, which are increasingly preferred by health-conscious consumers
- **Increased Consumer Confidence:** By reducing harmful compounds in food products, manufacturers can boost consumer confidence in their products, leading to increased brand loyalty and market share
- **Regulatory Compliance:**
- **Meeting Safety Standards:** Reducing the formation of harmful Maillard products such as acrylamides and heterocyclic amines helps food manufacturers comply with safety regulations and guidelines set by health authorities
- **Risk Mitigation:** Proactively addressing the presence of harmful compounds in food products can help manufacturers avoid potential legal and regulatory issues
- **Sustainability and Waste Reduction:**
- **Natural Preservatives:** Utilizing flavonoids as natural preservatives can reduce the need for synthetic additives, contributing to more sustainable food production practices
- **Resource Efficiency:** Optimizing thermal processing techniques to minimize harmful byproducts can lead to more efficient use of resources, reducing waste and energy consumption
- **Educational Value:**
- **Interdisciplinary Learning:** This research can serve as an educational resource for interdisciplinary learning, integrating concepts from food science, chemistry, nutrition, and health sciences
- **Hands-on Research Opportunities:** Provides students and researchers with hands-on opportunities to investigate the Maillard reaction, flavonoid interactions, and their implications for food safety and health
- **Scientific Advancement:**
- **Novel Research Directions:** The findings can inspire further research into the mechanisms of flavonoid action, leading to new discoveries in food science and health
- **Collaboration Opportunities:** Encourages collaboration between food scientists, chemists, nutritionists, and health researchers to explore the multifaceted benefits of flavonoids
- **Economic Benefits:**
- **Value-Added Products:** Developing new functional foods and nutraceuticals with health-promoting properties can create value-added products, potentially leading to new market opportunities and revenue streams
- **Cost Savings:** By improving processing techniques and ingredient formulations, manufacturers can reduce costs associated with food safety recalls and waste disposal
- These additional benefits highlight the broad impact of this research, extending beyond immediate applications in food design to encompass health, consumer trust, sustainability, education, scientific advancement, and economic growth

Biography

Dr. Khan completed his PhD in the National Center of Meat Safety and Quality Control, Nanjing Agricultural University, China. Subsequently, he undertook a two-year postdoctoral fellowship in Prof. Doing Wang's Lab at the Institute for Agro-products Processing, Jiangsu Academy of Agricultural Sciences, China. In 2021, he secured another postdoctoral research fellow position at the Institute for Advanced Study, Shenzhen University, working in Prof. Cheng's lab. Dr. Khan has published over 40 research articles in SCI(E) journals. Currently, he is working as a project manager (Animal Health) in Easternalong Pharmaceutical Co., Ltd, China.

Ivana Šarac
Group for Nutrition and Metabolism, Center of Excellence in Nutrition and Metabolism Research Institute for Medical Research, National Institute of Republic of Serbia, University of Belgrade, Belgrade, Serbia

The potential role of nutrition and gut microbiota in pathophysiology and clinical course of Autism Spectrum Disorder (ASD) and Attention-Deficit and/or Hyperactivity Disorder (ADHD) in children–current status of knowledge and therapeutic implications

There is accumulating evidence from recent research on the role of nutrition and the microbiota-gut-brain axis in the development of neuropsychiatric diseases, in both children and adults. In children, particularly Autism Spectrum Disorders (ASD) and Attention-Deficit and/or Hyperactivity Disorder (ADHD) have been shown to be associated with nutritional factors and gut microbiota. Even though the etiology and pathophysiology of those neuro-developmental disorders are largely unknown, there are data in animals and humans that associate diet and nutrition with their development and both aggravation (worsening) and improvement of the course. Particularly gastrointestinal disorders and food allergies and intolerances (on gluten, wheat, corn, cow's milk protein, soy, egg yolk and white, fish, cheese, nuts, citrus fruits, and chocolate) as well some nutrients and food contaminates (food preservatives and additives - artificial colors, flavorings, sweeteners, pesticides, sugars, certain amino acids and their metabolites, high glycemic index food, certain vitamins and minerals) have been associated with worsening of the symptoms, while some foods, nutrients and diets (e.g., short-chain fatty acids, polyunsaturated fatty acids, particularly omega-3, use of probiotics and prebiotics, non-digestible oligosaccharides, vitamins, minerals, other dietary supplements, ketogenic diet, Atkin's or modified Atkin's diet, low glycemic index diet, elimination diet, the medium-chain triglyceride diet, etc.) were associated with the improvement. Additionally, the role of certain bacteria (*Helicobacter pylori*, *Campylobacter jejuni*, *Clostridium*, *Firmicutes/Bacteroidetes ratio*, *Fusobacteria*, *Escherichia coli*, *Bacteroides fragilis*, *Bacteroides vulgatus*, *Ruminococcus*, *Desulfovibrio*, *Caloramator*, *Sarcina*, *Enterococcus*, *Streptococcus*, *Proteobacteria*, *Akkermansia muciniphila*, *Lactobacillus*, *Bifidobacterium*, *Prevotella*, *Coprococcus*, *Sutterella*, *etc.*) and yeasts (*Candida*, *Saccharomyces*, *Aspergillus*) in the gastrointestinal tract (stomach, colon), and small intestinal bacterial overgrowth and alterations of the intestinal barriers (leaky gut) and immunopathology were shown in those neuro-developmental disorders. Finally, the potential importance of breastfeeding in preventing those diseases is still unclear. Nevertheless, the evidence is still scarce and often contradictory, and further studies are needed to clearly define the possible preventive and therapeutic nutritional strategies. The present talk will present the current state of knowledge on this topic and possible prophylactic and therapeutic implications.

Audience Take Away Notes

- This presentation will provide the audience with information on the possible role of diet and gut microbiota in pathophysiology and clinical manifestations of Autism Spectrum Disorder (ASD) and Attention-Deficit and/or Hyperactivity Disorder (ADHD) in children
- The presentation will also present the possible pathophysiological mechanisms

- Additionally, the specific dietary and microbiota factors in ASD and ADHD will be separately analyzed
- Evidence on the effect of currently used dietary recommendations, dietary interventions and supplementation interventions will be presented and discussed
- Also, the gaps in present knowledge and controversies in evidence will be discussed

Biography

Dr. Ivana Šarac studied Medicine at Faculty of Medicine, University of Belgrade, and graduated in 1998. She entered her MSci postgraduate studies in Nutrition at the same institution, and finished it in 2004. In 2006 she also finished her medical specialization in Hygiene with medical ecology at Faculty of Medicine, University of Niš. She conducted her PhD studies in Diabetes and Metabolic Medicine at University of Surrey, UK, and obtained PhD degree in 2014. In 2016, she joined the Center of Excellence in Nutrition and Metabolism Research, at the Institute for Medical Research, University of Belgrade, as Senior Research Associate.

Jacqueline Namusalisi[1]* Job Alunga Chemutai[2]
[1]Sasakawa Africa Association, Uganda
[2]National Agriculture Research Organization, Uganda

Assessment of hermetic technologies in managing nutrient loss of stored maize grains

The World Health Organization recommends that an adult consumes 2000 Kcal/day and children to consume 3000 Kcal/day for normal functioning of the body. Maize contains 40% of the total calories required for an adult and 18% of the calories required by children. Both the aesthetic and nutritional quality of maize contributes to a wholesome and palatable meal. Strategies such as storage of maize in hermetic bags have been developed to reduce post-harvest fungal and mycotoxin contamination of maize. This study is, therefore to assess the synergy effect of hermetic storage to ascertain their effectiveness in conserving the grain quality and nutritional components in the grains in a safe and environmentally friendly system. All the treatments/technologies were subjected to two grain moisture levels, low (12-13%) or high (14-15%) and two levels of inoculation. Moisture content of the maize grains was determined by the standard methods. The technologies evaluated included, eight hermetic storage technologies and two controls with conventional, non-hermetic storage; the positive control (SWP+), and the other without insecticide, the negative control (SWP-). Grain samples of approximately 1kg were collected from each storage technology at 0, 4 and 8 months and analyzed for grain composition during the experiment. Insect infestation was evaluated by sampling 1000 kernels separating them into grains, insects and dust by sieving across a set of 4.7 mm and 1.0 mm aperture screens. The number of live and dead insects, both weevils and LGB counted and recorded. It was found to contain the average nutritional values of fats as 4-5%, protein 8-9%, starch 71-75% and moisture ranged from 12-15%. Three factors were used in the design of this study:
1) Artificial infestation of grain with mycotoxin producing fungi vs. natural infestation
2) Two levels of grain moisture levels
3) Ten storage methods, of which eight hermetic. The overall experimental design is a 2 x 2 x 10 completely Randomized Block Design (RCBD) with 3 replications. The findings indicated that maize nutritional and aesthetic values were affected by the mould proliferation, insect infestation and moisture levels in the maize grains over the twelve months of storage. Maize used for this study was collected from the farmers in Neissuit and Kigogo villages in Gilgil sub-county, Nakuru County and data on maize production practices recorded using a simple questionnaire.

The generated data from this study will facilitate sustainable adoption of the hermetic technologies among smallholder farmers in Sub Saharan Africa if these technologies can maintain the nutritional quality of the maize grains as is suggested in this study.

Jamal Ayour[1*], Hasnaâ Harrak[2]

[1]Bioprocess Laboratory (LASIME), Higher School of Technology and National School of Applied Sciences, Ibn Zohr University, Agadir, Morocco

[2]Laboratory of Agri-Food Technology and Quality, Regional Center for Agricultural Research in Marrakesh, National Institute for Agricultural Research (INRA), Marrakesh, Morocco

Characterization of apricot bioactive compounds and their health benefits

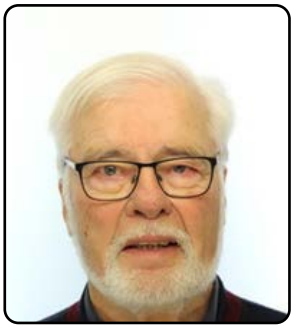
The nutrient profile and antioxidant capacity of the new apricot clones were analyzed to evaluate the evolution of bioactive compounds and their contribution to antioxidant activities during fruit ripening.

Among the studied bioactive compounds, polyphenols identified by thioacidolysis combined with the Ultra-Fast Liquid Chromatography (UFLC) methodwere the main contributors to the antioxidant activity of the apricot fruits.

The results showed that red and orange apricots had significantly higher phenolic contents and antioxidant activities than light apricots. This indicates, on the one hand, the importance of the color of the fruit skin in determining the quality of apricots and on the other hand the importance of color in the choice of fruits with high nutritional value.

Biography

Jamal Ayour PhD and Senior lecturer in Nutrition and Food Sciences. He is an expert in the chemical formulation of various new products and dietary supplements. He has published articles and books in reputable journals, participated in international conferences and has been a renowned member of several editorial and publication boards.



Jan-Olof Drangert
Department of Water and Environmental Studies, Linköping University, Linköping, Sweden

Improved food security in this century while averting global environmental degradation

Urbanization stabilizes during this century and 85% will reside in urban areas. Cities become hotspots for food demand and vast volumes of wastewater, excreta and organic waste. Most planetary boundaries are already transgressed and we search for improved human and environmental health while maintaining food security.

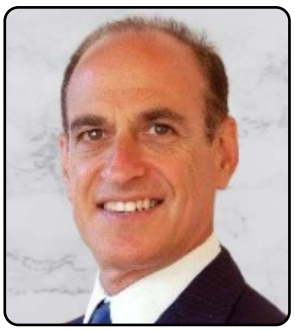
Consolidated global data on resources and various causes of environmental degradation allow us to conjure future resources restrictions as well as potential remedies to transgression of our Earth's boundaries. Food production occupies half of the habitable area and consumption is a major contributor to global environmental degradation. Engaging urbanites to revise diets, reduce food waste, providing facilitating urban infrastructure and less chemicals can shrink agricultural land use by more than half–and proportionally reduce environmental degradation such as GHG emissions and biodiversity losses–and still feed the world. Recycled urban-derived nutrients can replace one-third of chemical fertilisers and close resource gaps.

Keywords: Planetary Boundaries, Environmental Degradation, Urbanization, Nutrient Recycling, Healthy Diets, Food Security.

Audience Take Away Notes

- Make visible the connection between what we eat and the environmental degradation
- Individual actions can improve environmental sustainability
- Provides a guide for decision-makers when designing measures to curb pollution
- Reducing degradation and biodiversity losses takes time

Biography
Dr. Jan-Olof Drangert is em. Assoc. professor at Linköping University. His area of studies started with water issues in rural areas, then to urban sanitation challenges, and presently global environmental impacts of food systems. He has published more than 50 articles in reputed journals and has been serving as Guest Editor to several publications.



Dr. Jeffrey Anshel OD, FAAO
Corporate Vision Consulting, Kapaa, Kauai, Hawaii, USA

Nutrition for vision: A primer for eye health

Our eyes are our most precious sense. Our eyes are in use every day for every task. But chronic eye disease is becoming an epidemic for our aging generation. Dry eyes, macular degeneration, cataracts, diabetes and glaucoma, etc. are increasing and the numbers are expected to double in the next 20 years.

The latest research is now showing how nutrition plays a role in how our eyes age and how it can affect these chronic diseases. Specific nutrients have been shown to accumulate in the ocular tissues and it's more complicated than just eat your carrots. Nutrition for Vision: A Primer for Eye Health will show how to maintain good vision and keep eyes healthy throughout our lifetime. Attendees will learn about how the eye works and how it is affected by many of the same inflammatory diseases that affect other organ systems.

One key aspect here is that the eyes are a part of the body, so nutrition that affects all aspects of the body can affect the eyes as well. It is also obvious that the eyes are an extension of the brain, so nutrients that affect brain function can affect the eyes as well. We will discuss some basic dietary and nutritional concepts in a practical way.

Lifestyle changes that can make a difference will be discussed as well. It has been well-documented that myopia, or nearsightedness has increased greatly since the pandemic. The association of near-viewing and myopia, as well as the issue of blue light exposure will be addressed.

Audience Take Away Notes

- The presentation will be sectioned off into specific diseases and how nutrients affect each disorder
- The presentation will allow the attendees to interact with the clients eyecare professional on a deeper, more meaningful level
- The information presented can be a basis for further research
- The presentation will allow for easy access to nutrition information for specific disorders

Biography
Dr. Jeffrey Anshel is a 1975 graduate from the Illinois College of Optometry. He has written numerous articles and nine books regarding nutritional influences on vision and computer vision concerns. Dr. Anshel is the principal of Corporate Vision Consulting, where he addresses nutrition and eye health, as well as digital eyestrain. He lectures internationally to ergonomic professionals and eyecare providers on vision health topics. Dr. Anshel is a Fellow of the American Academy of Optometry and Founder and Past President of the Ocular Wellness and Nutrition Society. He maintains a consulting business in Kapaa, Hawaii.

Joanna Newerli-Guz
Department of Quality Management, Gdynia Maritime University, Gdynia, Poland

Possibilities of using herbs and spices in Horticulture therapy

Why Horticulture Therapy is good for people?
Horticulture therapy is used for centuries to treat different kinds of physical and mental infirmities. It involves the use of plants, as well as plant-based activities, for healing and rehabilitation. It brings a number of benefits: spending time outside the buildings, in the fresh air, contact with the nature, exposure to natural light, vitamin D synthesis, physical exercise in form of working in the garden, building bonds with nature, having fun, working with plant material, improving well-being. Very important is contact with soil, rich in microorganisms like Mycobacterium vaccae, which causes the release of serotonin, consequently improving mood and brain functioning.

What are the benefits of using spices and herbs in horticulture therapy?
Horticultural therapy uses the classic functions of spices related to the modification of sensory characteristics: taste, smell, color, their preservative effect, and those related to the promotion of healthy eating habits, use in medicine, cosmetics and floristry.

What kind of plants from spice and herbs group are used in horticulture therapy?
In horticulture therapy, herbs and spices are used as ordinary plant material, but above all in sensory gardens, where the space must be arranged with plants in a way that is conducive to the stimulation of the senses, including non-visual ones: taste, smell, hearing and touch. The herbs and spices used must be harmless when taken orally, even in larger quantities, because they are consumed, tasted, rubbed and touched.
The aim of the study is to assess the possibility of using herbs and spices in horticulture therapy, to organize and divide them according to their use in this type of therapy.

Audience Take Away Notes

- First of all, they get acquainted with horticulture therapy as an interesting remedy affecting our senses, helping with various ailments. Secondly they will gain knowledge about the possibilities of using herbs in their everyday life, professional work not only in a familiar way. Herbs and spices used in horticultural therapy offer a wide range of possibilities that can be tailored to the individual needs and interests of participants, supporting their physical, mental and emotional health

Biography
PhD Eng Joanna Newerli-Guz studied Commodity and Cargo Sciences at the Higher Gdynia Maritime School and graduated as MS in 1996. She then joined the research group of Prof. Maria Śmiechowska at the Department of Commodity Science at Gdynia Maritime Academy. She received her PhD degree in 2006 at the same institution. She is a graduate of postgraduate studies in horticultural therapy. The PhD's research interests concern products of plant origin, in particular herbs and spices, and the possibilities of their use. She has published more than 150 research articles in different journals.

Aleksandra Baryła[1,2], Kamil Mąkosza[1,2*], Małgorzata Muc-Wierzgoń[2], Sylwia Dzięgielewska-Gęsiak[2]

[1]Doctoral School, Medical University of Silesia in Katowice, Poland

[2]Department of Internal Diseases Propaedeutics and Emergency Medicine, Faculty of Public Health in Bytom, Medical University of Silesia in Katowice, Poland

Coordinated care program in polish primary care - new opportunities for nutrition education

Background: The Coordinated Care Program (CCP) in Poland involves the cooperation of a primary care physician with specialists, a nurse and a nutritionist. It includes prevention, diagnosis, treatment and patient education for selected diseases in the fields of cardiology, diabetology, endocrinology, pulmonology and nephrology. Since in Poland visits to a nutritionist are not reimbursed by the National Health Fund, an undoubted advantage of CCP is free access to consultations with a nutritionist. A patient can take part in up to 3 meetings with a nutritionist.

Aim: We would like to present the benefits and difficulties of the program from the perspective of a dietitian working in the CCP area, as well as share the results of a pilot study conducted among patients with cardiovascular disease enrolled in the CCP.

Methodology: The pilot study involved 110 patients with cardiovascular diseases. After applying the inclusion and exclusion criteria, 105 patients (average age 65 years) were qualified for further research procedures. The first visit (estimated time: 30-40 min) included: conducting an interview, analysis of eating habits, anthropometric measurements, determining the patient's needs, educational requirements and motivation, establishing recommendations, providing educational materials. At the next two visits, the effectiveness of the consultation is evaluated, the changes made are discussed, any difficulties are discussed, and the next course of action is determined (expected time per visit 15-30 minutes). Data were processed in Microsoft Excel and Statistica 13.3 for Windows.

Results: Based on a pilot study (observation period 6 months) the following changes were observed among patients: decrease in blood pressure, improvement in glycemia among patients with associated type 2 diabetes, increased nutritional awareness, improvement in eating habits. Despite the breakthrough made in Poland in the context of free dietary consultations, undoubtedly, the number of visits intended for patients is still insufficient for their needs. The dietitian must be well organized in order to obtain the necessary information, identify the patient's needs and make all dietary recommendations. The average age of patients using this program is 65 years old and this patients need more time to assimilate new knowledge. In addition, these individuals most often face multiple disease entities, which requires combining several different nutritional interventions and presenting them in a simple and clear way. In addition, another difficulty is the lack of an open pathway with gastrointestinal diseases within the CCP. No less important is the problem of overweight and obesity occurring among these patients. The task of the dietitian is to set the objectives of a reduction diet, which is not the only way of solving the problem. It's very important to identify the causes, at the root of which are often psychological problems related to overeating due to stress or failure to cope with emotions. In this regard, the dietitian's competence and tools are insufficient and the patient requires the support of a psychologist, who is missing from the team.

Conclusions: The Coordinated Care Program of the PCP is an opportunity for interdisciplinary patient care, providing a chance for faster diagnosis, treatment and nutritional interventions in the most common chronic diseases of the 21st century.

Audience Take Away Notes

- It can be used as an inspiration for introduction of similar programs in other countries. It shows importance of dietician and allows access to dietary management for those who normally would be not able to have it
- Dietician is able to better understand and plan his visit regarding needs & problems of patients
- Yes–Diabetologist, Cardiologist, Endocrinologist
- Yes. Reduces burden on the doctors by transferring part of their workload to diabetologists
- It will provide new information needed for various statistical prognosis for Polish Ministry of Health and National Health Fund

Biography

Master's degree in clinical and oncological dietetics. PhD student at the Medical University of Silesia in Katowice, Poland. Active participant during national and international scientific conferences. Author and co-author of scientific publications in journals and monographs. Postgraduate student in the fields: psychotraumatology, psycho-oncology. He conducted classes for students of the dietetics and eating disorders course at a post-secondary school in Gliwice, Poland. He worked as a clinical dietitian at the Upper Silesian Medical Center in Katowice, Poland.

Kamil Mąkosza[1,2]*, Aleksandra Baryła[1,2], Sylwia Dzięgielewska-Gęsiak[2], Małgorzata Muc-Wierzgoń[2]

[1]Doctoral School, Medical University of Silesia in Katowice, Poland

[2]Department of Internal Diseases Propaedeutics and Emergency Medicine, Faculty of Public Health in Bytom, Medical University of Silesia in Katowice, Poland

Prohealth nutritional strategies as tertiary prevention in Colorectal Cancer patients

Background: Nutrition is a crucial element of tertiary prevention in Colorectal Cancer (CRC) patients. It is a fundamental part of complex therapeutic process. The proper nutritional status of oncological patient is really essential to prevent disease progression and numerous serious complications, such as malnutrition, anorexia, cachexia, eating disorders and a lot of systemic disfunctions. Cancer progress and its therapy cause many side effects that reduce the quality of life.

Aim: Analysis of preventive activities in the field of tertiary nutritional and proheatlh prevention, including determining of the dependencies between these attitudes and the gender, education and Body Mass Index (BMI) of patients.

Methodology: The study involved 212 CRC patients. After applying the inclusion and exclusion criteria, 202 CRC patients were qualified for further research procedures. The research was conducted in two hospitals in Silesia Region, Poland and using the snowball method as a non-random sampling to increase the sample size. The research tool was the original questionnaire. After the study, each patient was offered prohealth education and individual nutritional advices. Data were processed in Microsoft Excel and Statistica 13.3 for Windows. Numbers and percentages were used in descriptive statistics. Chi-Square test was made to check statistical dependencies. P-value<0.05 was considered as statistically significant.

Results: Half of the patients did not follow a proper diet (n=101; 50.0%). Majority of the study group declared side effects during treatment (92.6%). More than half of the patients ate only 3 meals a day (57.4%). However, snacks in the form of simple carbohydrates were often consumed (n=67; 33.2%). Many respondents consumed vegetables and fruits in raw form (n=140; 69.3%). Almost a quarter of the patients were not physically active at all (n=45; 22.3%). Half of the respondents indicated that they consumed 1.5 liters of fluids per day (n=101; 50.0%). One third of patients admitted that they drink sweetened drinks several times a month (n=68; 33.6%). According to patients, some health and nutritional aspects were more beneficial during the disease (tertiary prevention) than before the disease (primary prevention). Elements that were indicated as more beneficial: current nutrition (n=112, 55.5%), absorbing more fluids (n=86; 42.6%), snacking less often (n=69; 34.2%), choosing high-protein products (n =59; 29.2%). Men consumed ethanol drinks significantly more often than women (13.3% vs. 0.8%; p=0.0004). Women chose low-proof alcoholic beverages significantly more often (46.7% vs. 6.3%; p=0.0007). Patients with basic vocational education smoked cigarettes significantly more often (n=7; 15.6%) than those with secondary (n=8; 8.3%) and higher education (n=3; 4.9%) (p=0.02). Respondents with obesity consumed meat significantly more often (n=7; 25.0%) than patients with normal body mass (n=4; 6.5%) (p=0.02).

Conclusions: The analysis showed pro- and anti-health activities of patients. Behaviors that are unfavorable require modification and nutritional education. It was found that less satisfactory strategies were presented

by respondents: male gender, with lower education and excessive body mass. It proves the need to strengthen health-promoting activities in comprehensive tertiary prevention by an interdisciplinary team, especially among patients with weaker health-promoting behaviors.

Audience Take Away Notes

- The presented research area will outline the essence of nutrition and lifestyle in the tertiary prevention of cancer. This will make it easier to understand the needs of this group of patients, and it will also be possible to partially prevent and minimalize the occurrence of side effects
- The presented own research will help to understand the significant importance of an interdisciplinary therapeutic team in the prevention and treatment of chronic diseases, including cancer. What is more, it may add dietary strategy based on gender, education and BMI in cancer patients
- All medical students, physicians and nutritionists as well as employees could expand own research with numerous, valuable elements. Thanks to this, the presented own study will gain in scientific value, gain new interdisciplinary aspects and reveal many other important areas and research problems
- It seems that the presented topics provide practical solutions. It indicates the need for the presence of an oncological dietitian in the therapeutic process of the disease. This will undoubtedly help ensure the best possible nutritional status of patients and implement appropriate nutritional interventions depending on the individual condition and needs of patients

Biography

Kamil Mąkosza holds a master's degree in clinical and oncological dietetics. He is a PhD student at the Medical University of Silesia in Katowice, Poland. He actively participates in national and international scientific conferences and has author and co-author of scientific publications in journals and monographs. He is a Postgraduate student in the fields: psychotraumatology, psycho-oncology. He has conducted classes for students of the dietetics and eating disorders course at a post-secondary school in Gliwice, Poland. He has also worked as a clinical dietitian at the Upper Silesian Medical Center in Katowice, Poland.

Jordi Cuñé Castellana, Laia Martí Melero*, Carlos de Leacea Flores de Lemus
AB Biotek Human Nutrition & Health, Hampton Peterborough, England

Kluyveromyces marxinaus ABB S7: A technological revolution in the production of bakery products for people with sensitivity to FODMAPs

Context: Individuals with functional gastrointestinal disorders, like Irritable Bowel Syndrome (IBS), benefit from a diet low in Fermentable Oligo-Di-and Monosaccharides and Polyols (FODMAPs) since they are known as poorly absorbed substances found in various foods. When these substances pass through the digestive system, they can cause digestive discomfort as they could not be well absorbed by our gut yet metabolized by our microbiota. Intestinal microbiota is then responsible of secondary symptoms such as gas production and alterations in osmotic pressure. Due to the relevance of FODMAP sensitivity emergence as well as the increase in scientific and technical studies published in the market today, a solution for the previously mentioned issue was pursued.

Aim: This study explores a yeast-based technology using *Kluyveromyces marxianus* ABB S7 to reduce fructans levels in whole wheat bread, making it suitable for individuals with FODMAP sensitivity. Therefore, our aim is to make basic, naturally low-FODMAP items, starting with baked goods.

Methods and Outcomes: The study involves the use of classic microbiological tools to isolate potential strains, molecular characterization techniques, and analytical methods to develop a yeast-based method for FODMAP reduction in baked goods.

A Combination of Two Different Strains: K. marxianus ABB S7 and Saccharomyces cerevisiae demonstrated the reduction of fructans content in bread by 60%, without increasing other FODMAPs. The developed bread meets international consensus standards for low FODMAP products. This research contributes to providing solutions for individuals with FODMAP sensitivity, addressing the challenge of consuming FODMAP-rich foods like wheat-based products.

Data Collection and Analysis Procedures: Data collection involved experimentation with different yeast strains in bread fermentation. Analysis included measuring changes in fructan content and evaluating the final FODMAP levels in the bread.

Conclusion: Overall, our approach involves identifying natural microbial processes that can break down fructans during the fermentation of these products. This resulted in products that are not only low in fructans but also taste good and meet regulatory standards.

Audience Take Away Notes

- The objective is to present a type of food that often causes indigestibility to the population. The audience will learn about the problems linked to FODMAPs, as well as the possibility of reducing their effects thanks to the application of two strains of yeast in synergy, for the elimination of fructans
- It will help them find potential options for their products
- Their teaching
- It is a solution framed within food science, with the aim of improving human health

Biography

Laia Martí Melero studied at the Universitat Autònoma de Barcelona (UAB) and graduated in 2020. She holds a master in Bioengineering from the Institu Químic de Sarrià (IQS) with a thesis focused on gene therapy. In addition, she has a master in science teaching.

Maria Concetta Scuto
Department of Biomedical and Biotechnological Sciences, University in Catania, Italy

Hormetic nutrition with mushrooms: Redoxomics and lipidomics approaches in clinic

Hormetic nutrition for enhancing stress resilience and overall human health have received much attention. Meniere's Disease (MD) is a cochlear neurodegenerative disorder characterized by hearing loss, recurrent episodic vertigo, aural fullness and tinnitus. Redoxomics has been successfully applied to study neurodegeneration of ganglion neurons of the inner ear for the identification of potential biomarkers and novel mechanisms of MD disease progression and the assessment of treatment prognosis and outcome. The identification and quantification of diverse lipidic species in human urine by innovative mass spectrometry platforms is of considerable importance to study redox metabolic homeostasis in normal and pathophysiological conditions. Emerging evidence indicates that hormetic nutrients including mushrooms supplementation with Coriolus versicolor biomass targeting Nrf_2 pathway and stress resilience vitagenes have shown to improve neurotoxicity and mitochondrial dysfunction thus inhibiting oxidative stress and neuroinflammation that trigger neurosensorial degeneration of spiral ganglion cells. In this study we showed increased levels of carbonyls, HNE and pro-inflammatory NF-kB pathway as well as reduced mitochondrial complex activities in MD patients with respect to MD plus Coriolus treated group for 6 months. According to hormesis, supplementation by Coriolus biomass for 6 months exhibits biphasic dose-response effects by upregulating at low dose the expression of HO-1, Hsp70, Sirt1, Y-GCs and Trx ($P<0.05$) in lymphocytes of MD patients as compared to untreated MD patients and by a significant increase in the plasma ratio reduced glutathione (GSH) vs oxidized glutathione (GSSG) ($P<0.05$) as measure of antioxidant status to oxidative stress. Lipidomics showed a significant increase of bioactive eicosanoid lipoxin A4 in lymphocytes, plasma and urine of MD patients compared to controls as well as a significant reduction of pro-inflammatory eicosanoid F_2-isoprostane. Metabolomics approach and results will be also discussed. In conclusion, hormetic nutrients including Coriolus biomass supplementation targeting vitagenes could be considered a promising nutritional approach in healthy aging medicine and anti-neurodegenerative therapeutics for neuroprotection in order to prevent or inhibit inflammation related to oxidative stress-induced neurodegenerative damage in MD patients and high risk of developing sensorineural hearing loss.

Audience Take Away Notes

- Antiaging Medicine and the role of Nutraceuticals, such as antioxidant mushrooms, redoxomics and lipidomic analysis, focusing on the role of lipoxin A_4 in human pathologies, such as Meniere's disease and risk of sensorineural degeneration
- Hormetic Nutrition with Coriolus biomass is a promising and innovative approach against inflammation to reduce the aftermaths correlated oxidative stress-induced neurodegenerative damage of cochleovestibular diseases including MD, but also all pathologies associated with Sensorineural Hearing Loss (SSNHL)

- Role of hormesis, brain resilience and modulation of vitagene pathway as pivotal mechanisms for mental health in neurodegeneration and risk of developing sensorineural hearing loss
- Redoxomics approach by the modulation of Nrf_2 pathway and stress resilience vitagenes in MD patients after Coriolus supplementation represent a mechanism of cellular adaptive response to counteract excess of ROS and restore systemic redox homeostasis in MD patients
- Identification and quantification of several lipid species in urine samples by Lipidomics analysis is of considerable importance to understand redox metabolic homeostasis in normal and pathophysiological conditions

Biography

Dr. Maria Concetta Scuto studied Biology at the University of Catania, Italy and graduated in Cellular and Molecular Biology at University of Catania 2010. On February 13th 2015 she received the PhD in Neurobiology at the same institution. After the postdoctoral fellowship at the University of Catania she is qualified as Associate Professor in sector 05/E3- II category Clinical Biochemistry and Clinical Molecular Biology and obtained the position of a researcher in Clinical Biochemistry and Clinical Molecular Biology. She has published more than 45 research articles in prestigious International Journals.

Martino Laurenzi[1*] MD, MPH, Oscar Terrradura Vagnarelli[2], Massimo Cirillo[2] MD

[1]CeSEG Centro Studi Epidemiologici di Gubbio/ Gubbio, PG, Italia

[2]Dipartimento di Nefrologia Università di Salerno/ SA Italia

Alcohol consumption and mortality data from the first 40 years of the Gubbio population study

Background: The Gubbio Population Study ('Gubbio Study') is a prospective epidemiological study carried out on the population residing within the historical center of the city of Gubbio, Perugia, Italy. Together with public health objectives (control and awareness of hypertension), and experimental ones (the role of electrolyte handling at the cellular membrane level and its relation to hypertension) additional objectives were addressed by the study, in particular the role of kidney function.

Methods: Three active screenings (exams) were performed beginning 41 years ago: the first ('Exam 1') in 1983-1986 (5376 individuals–response rate 92%) and two follow-up exams, were completed between 1989-92 ('Exam 2') and 2001-2007 ('Exam 3'). Data were collected on demographics, personal and family medical history, lifestyle (smoking, alcohol, diet and physical activity), education, type of work, anthropometry, blood pressure, pulse rate, blood biochemistry, urine biochemistry and special investigations on cellular electrolyte handling. Data on hospitalization, mortality and causes of death were also collected.

Results: The results that will be presented identify new variables to consider in screening for cardiovascular risk factors, and show the impact that the focused and coordinated effort of a longitudinal program can have on a free-living population. Special attention will be given to data that show a J shape curve when plotting mortality for all causes against reported daily consumption of alcohol.

Conclusions: The data are of relevance to Public Health and to experimental medicine alike and underline the importance of the control of risk factors at the community level. They also contribute to support the theory that daily consumption of a moderate amount of wine is associated with a better kidney function and with a lower all-cause mortality.

Audience Take Away Notes

- The design, scope and objectives of the Gubbio Population Study
- The main data from the first 40 years of this longitudinal endeavor
- Particular attention will be given to the impact of the consumption of alcohol on all-cause mortality
- A collaboration is already in place with other Universities, in Italy and internationally

Biography

Dr. Martino Laurenzi holds a degree in Medicine and Surgery and a PhD degree from the School of Hygiene and Preventive Medicine from the University of Rome 'La Sapienza', and a Master of Public Health from Columbia University in NYC. He has worked for many years in Europe and in the USA as Director of Clinical Research for the Pharmaceutical Industry, and as Director of Epidemiological Research for non-profit organizations. He has held positions at North Western University Medical School in Chicago and at the London University College. He currently is President of the CeSEG (Centro Studi Epidemiologici di Gubbio).

Maryam Mousivand
Microbial Biotechnology Department, Agricultural Biotechnology Research Institute of Iran, Agricultural Research, Education and Extension Organization, 3135933151, Karaj, Iran

Aptamer discovery using evolutionary mimicking algorithm: A smart approach toward food safety biosensing

While antibodies have become the most popular recognition elements in biosensor words for four decades but it is difficult to produce monoclonal antibody towards many food contaminants such as mycotoxins, antibiotics and heavy metals. Given the practical advantages over analogous antibody, aptamer have emerged as a potent rival with high binding affinity and specificity towards a broad range of targets regardless of their immunogenicity. Aptamers are single-stranded oligonucleotides that can be selected through an in vitro selection process called SELEX (Systematic Evolution of Ligands by EXponential enrichment). Regarding to the low cost, ease of synthesis and modification, aptamers are attractive candidates to develop aptasensors especially for small and non-immunogenic contaminants in food and agricultural products. Despite this potential, high functional aptamers selected through SELEX procedure are relatively few due to the technical challenges of aptamer development for small molecule targets. Difficulties in aptamer development for small hazardous compounds have constituted major bottlenecks for acceptance and commercialization of their biosensing platforms. To overcome the challenges, experimental findings can be combined to in silico approaches to refine the affinity and specificity of the selected aptamers. Design of virtual nucleic acid libraries using evolutionary mimicking algorithms and their screening via computational simulations techniques facilitate the selection of high functional aptameric probes in a cost and time effective way. Computational simulation studies can be considered as reliable and green solutions for hazardous binding aptamers discovery through sequence and scaffold optimization. Design and engineering of high functional probes via in silico studies could open a new and much-needed avenue for aptamer engineering researches in affordable manner.

Audience Take Away Notes

- The audience will be familiar with the evolutionary algorithms and computational simulation studies in aptamer design and their optimization to develop various biosensing platforms for small hazardous compound monitoring in agriculture and food products
- Probe design using in silico strategies will provide the possibility of biosensor development in a cost and time effective way that can be exploited by researchers and companies active in contaminant monitoring in the food industry
- Yes, sure this research that other faculty could use to expand their research or teaching
- Yes, these findings highlighted the reliable and robust application of computational simulation studies for novel small binding aptamer development and consequently open up a much-needed avenue to design various aptasensing platforms in green and cost effective ways
- Regarding to the high consistency between our experimental and in silico findings, aptamer engineering through integrated evolutionary mimicking algorithm and computational studies sequence can be considered as a new and promising research field for novel small binding aptamer development. Low-cost integration of the newly designed probes as recognition elements in

existing aptasensing platforms allow designing various novel aptasensor for small molecule target monitoring in a green way

- Cost and time effective designing of new and high functional aptamer are possible without experimental materials and equipment
- This strategy can be exploited for design and improving other recognition elements or enzyme binding site as well

Biography

Dr. Maryam Mousivand studied plant pathology at the Tehran University, Iran and graduated as PhD in 2020. Since 2004, she has joined the research group of the Microbial Biotechnology Department at the Agricultural Biotechnology Research Institute of Iran. Currently, she is head of microbial biotechnology department and her research interest is aptamer engineering using genetic algorithm for aptasensor development to monitor contaminants in food and agriculture products. During the last 10 years, her research has focused on the aptamer probe design of and aptasensor development for mycotoxins and antibiotics detection. In collaboration with the Tehran university, Turin University and Proxentia Company in Italy, she designed two novel aflatoxin B1binding aptamers and successfully exploited them as recognition elements in the lateral flow aptasensors and the reflective phantom interface (RPI) platform.

Mathieu Merlet*, Luca Vernetti-Prot, Sabina Valentini
Institut Agricole Régional, Aosta, Aosta Valley, Italy

Milk protein polymorphisms of Aosta Valley cattle breeds

Cow's milk proteins are encoded by highly polymorphic genes characterized by several mutations, which result in different allelic variants. Each allelic variant has different possible effects on cheese-making properties and on human health. β-casein A1-A3-I-B, k-casein B and β-lactoglobulin B are supposed to influence milk cheese-making properties by increasing cheese or milk yield, by varying chemical parameters, by having small casein micelle size, and by influencing Rennet Coagulation Time (RCT) and Curd-Firming Rate (CFR). In addition, β-casein A1-B are also considered to be a risk factor for different human health diseases such as Ischemic Heart Disease (IHD), Type 1 Diabetes (T1D), decreased Glutathione (GSH) concentration, and milk intolerance. An LC-MS method was applied to profile, for the first time, the main milk proteins genetic variants from Aosta Valley autochtonous cattle breeds. Analyses performed on milk collected from bovines of three cattle breeds (Red Pied – VRP, Black Pied–VNP and Chestnut–CAS), either from IAR experimental farm or from herds of dairy-producers in Aosta Valley region, showed quite high frequencies of β-casein A2 and A3/I, and low frequencies of β-casein A1. Moreover, low frequencies of β-casein B in VRP breed and high frequencies of the same variant in CAS, and VNP breeds have been found. As far as k-casein is concerned allelic variant, B is the most diffused in VRP while allelic variant A in VNP and CAS breeds. Finally, β-lactoglobulin most diffused allelic variant for all breeds is B. Results suggest that Aosta Valley milk has good cheese-making properties and good frequencies of β-casein A2 that may be related to beneficial effects on human health. In light of these results, it is important to develop breeding programs, which take into consideration milk proteins polymorphisms to further increase the milk suitability for cheese-making process and to decrease the presence of β-casein A1 and B in drinking milk, which can be a risk factor for human health.

Audience Take Away Notes

- The audience will be able to learn new information on milk protein allelic variants among autochthonous cattle breeds and a new investigation method regarding this topic. This is the first milk protein polymorphisms characterization of Valdostana cattle breeds
- This study can help the audience in the application of a RP-HPLC-ESI(+)/MS method to detect bovine milk protein allelic variants
- This research could help other faculty to accelerate, to increase efficiency and to target directly native intact protein in the milk protein allelic variant analysis

Biography

Dr. Mathieu Merlet studied Food Science and Technology at University of Turin, Italy and graduated as MS in 2020. He joined the research group of Laboratory's Unit at Institut Agricole Régional in 2021 after the master thesis. During these years, he has published three research articles and participated to different international congresses regarding food bioactive compounds and mass spectrometry.

Maurizio Binacchi
Engineer New Educational Technologies, Trevignano Romano, State, Italy

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 Raffaella Conversano's 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 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.

Audience Take Away Notes

- The analysis of my research project promotes the functional narrative investigation of each subject whose somatic, clinical, or pathologically compromised characteristics require in- depth knowledge to personalize nutrition
- Mastering the methods of functional narration in a scientific way will best help in discovering, especially in those subjects clinically compromised by serious and/or very rare pathologies and/

or without verbal communication, which foods are most suitable for supporting the clinical data by satisfying the individual and his tastes

- It is a fundamental research focus for teachers in their daily investigation
- If used in a functional way, it is an excellent tool for designing a nutritional path in various contexts, including and above all clinical ones
- Extremely optimally it improve the accuracy of a design or provide new information to assist with a design problem

Biography

Prof. Binacchi achieved his degree in electronic engineering in 1978 and made his PhD defense few years later. He began his work in a IT company till 2000. After that began teaching in the Rome university La Sapienza on teaching technology.

Most Tahera Naznin PhD
Department of Agriculture, Veterinary and Rangeland Sciences, University of Nevada, Reno, UNR Extension, 8050 Paradise Road, Las Vegas, NV 89123, USA

Towards urban nutrition security: The impact of various light spectrum on antioxidant-rich fresh food production in the city

Currently, 56.9% of the world's population lives in cities, with 68% anticipated to do so by 2050. Rapid urbanization is associated with increased urban poverty, pollution, food insecurity, malnutrition, and unemployment. The majority of people who live in cities consume ready-to-eat foods that are dense in sugar, which is contributing to the rise in obesity. Poor nutrition is also a major contributing factor to the rise in non-communicable diseases. Antioxidant-rich fresh food is beneficial for a healthy diet. Light is the most important factor in plant growth. Plants react to changing light quality through a variety of dynamic and complex systems. Light wavelengths cause plants to undergo a variety of morphological and biochemical changes that are essential to their health. LED light may be programmed to target specific wavelengths that plants absorb. This allows growers to tailor the light wavelengths needed to optimize yield while limiting the wavelengths that minimally affect plant growth. Lettuce is a prominent fresh food that plays a significant role in the diet and nutrition of North Americans. The purpose of this study was to look into the effects of various LEDs on lettuce vegetative development and antioxidant accumulation. In this study, we investigated different ratios of red and blue LED light treatments. Lettuce (Lactuca sativa) seedlings were grown in a growth chamber at 25+/-2.5°C, with ambient CO_2 and a photoperiod of 16 hours light and 8 hours darkness under fluorescent light. Seeds were germinated, and two weeks later, seedlings were planted in one-inch rockwool cubes in trays for soilless hydroponic culture with half-strength Hoagland's solution, then moved into an LED light chamber. Lettuce plants were cultured for four weeks after transplantation, and fresh and dry mass were measured. Leaf tissue samples were frozen prior to lyophilization. Antioxidant properties were determined using freeze-dried leaf tissues. The lowest significant growth (fresh mass and dry mass) and accumulation of antioxidant properties were seen with higher level of red LED. However, higher antioxidant accumulation was found when plant cultured under higher level of blue light. This study will help improve the choosing of LEDs for control environment production in the city.

Audience Take Away Notes

- The audience will gain knowledge about food's antioxidant component. Additionally, they will discover how vital fresh foods high in antioxidants are to human health. The vast majority of urban dwellers eat ready-to-eat foods high in sugar. One of the main reasons non-communicable diseases are on the rise is poor nutrition. Healthy eating can benefit from fresh food high in antioxidants. This will contribute to an improved understanding of food
- The audience that are interested in working in the food processing, food chemistry, or production sectors will benefit from this presentation. Those in the audience who intend to work in the field of urban food security will also benefit from this
- This will assist other faculty members interested in urban sustainability, antioxidant-rich functional foods, and food chemistry to broaden their knowledge in research and teaching

Biography

Dr. Naznin earned an MS degree in food chemistry from Osaka Prefecture University in Japan in 2007. She subsequently enrolled at the same university to obtain her doctoral degree. In 2010, she earned her PhD. She worked at McGill University, Canada and Agriculture and Agri-Food Canada as a postdoctoral scholar following the awarding of her PhD. Currently, she is an Associate Professor at the University of Nevada, Reno, USA. Over 45 research articles have been published by her. She has authored three book chapters. She delivered research presentations at 43 scientific conferences.

Ngono Mballa Epse Abondo[1*], Dr Amina Soufiyanou[2], Prof. Ndongo Joseph Thierry[3]

[1]PharmD, DEA, D3C, PhD, Associate Professeur Pharmacotechny and Pharmacognosy, University of Yaoundé 1, Cameroon

[2]PharmD, Researcher Department of Pharmacology and Traditional Medicine, Faculty of Medicine and Biomedical Sciences, University of Yaoundé 1, Cameroon

Physicochemical and microbiological quality control of nutricosmetics used as curve enhancers by women in Yaoundé

Nutricosmetics, used for weight gain are available online; the presentation of these products shows sachets of tablets with different sizes and colors. Women are consuming after money transfer payment, and collect the product in a place without contact with vendors. The objective of the study was to identify compounds present in these nutricosmetics used as curve and butt enhancers, and sold on the informal market. Products were collected using the customers' usual online purchasing method; then pharmacotechnical tests (uniformity of weight and disintegration), microbiological analyzes were done at LANACOME. The identification of active principles by Liquid Chromatography coupled with Mass Spectrometry (LC-MS) were carried out according to standards at the National Training High School, Yaoundé. Then, 11 batches including 4 composite batches for a total of 18 samples were tested; as results, 100% of the batches did not comply with WHO specifications for labeling; 44.4% were non-compliant for the mass uniformity test according to the Pharmacopoeia, 9th edition; 27.78% of the batches had a disintegration time greater than the 30 minutes required by the above specification. However, 100% compliance with microbiological tests was obtained. LC-MS revealed the presence of Cyproheptadine at 44.4%, 5.56% Prednisolone, 11.1% 7-Epi-hydroxyjasmonic acid glucoside and 5.56% aphyllic acid. We learned that curve and bust enhancers used by women, are not organic products, nor nutricosmetics but orexigens, sterols and other impurities, chemicals, were found inside; and by its activities might be at risk for public healthcare.

Keywords: Butt Enhancers, Quality Control, Nutricosmetics, Cyproheptadine, Prednisolone, LC-MS.

Audience Take Away Notes

- The business of curve, breast and butt enhancers is very developed and organized
- Vendors are implementing it in the informal market at very high cost
- Components used in the protocols are not organic or nutraceuticals, but dangerous products like steroids and orexigens
- Labeling evaluation and pharmacotechnical testings were not compliant to standards; this expose women for heath hazards
- The screening by liquid chromatography coupled with mass spectrometry is useful to identify the active principles

Biography

Dr. Ngono Mballa Rose, studied pharmacy at Marseille Mediterranean Faculty of Pharmacy, France and graduated as PharmD In 1988. She joined the Ministry of Research at IMPM from 1989 to 1993; and graduated as 3rdCycle Dr. in Biochemistry at 1993, Yaoundé 1 University. After she become Director of Pharmaceutical Services, (1995 to 1998). Then she worked as Temporary Adviser in WHOAFRO (1999-2000); Technical Officer in WHO Geneva (2001); WHO National Officer in Cameroon Country office (2002-2011). She came back to academic as Lecturer (2012-2016), Senior Lecturer (2017-2022); she received her PhD degree in 2021 at UY1. Meanwhile, she is Chair of the department of Pharmacology and Traditional Medicine since 2017, and DG LANACOME from 2015 to now. Associate Professor by January 2023, she has published more than 30 research articles and books.

Arisa N. U*, Awoseye I. O.
Department of Food Science and Technology, Bells University of Technology, Ota, Ogun State, Nigeria

Nutrient composition, acceptability and microbiological characteristics of cakes produced with refined shea butter and avocado mesocarps

Cakes are sweet baked goods eaten as desserts and used for special occasions. Shortenings are hydrogenated refined vegetable oils with possibility of occurrence of trans fats. Ripe avocados mesocarps have buttery textured puree and contain monounsaturated fatty acids. Shea butter a naturally occurring vegetable fat is underutilized in foods. This study determined the effects of avocado paste and/or shea butter as fat replacer on nutrient composition, acceptability and microbiological characteristics of cakes. Batches of cakes were made from either all Margarine (M0) or avocado Mesocarp (M1) or shea butter (M2). Another batch was made from shea and avocado (M3) (1:1). Last batch was made from margarine, shea butter and avocado (M4) (4:3:3). Cakes produced were analyzed for proximate, mineral, some fat chemical characteristics, microbiological and sensory characteristics. Fat content of avocado cake (5.80%) was significantly lower than other samples' ($p<0.05$). All avocado or shea butter cakes had higher Mg content (48.54 or 48.86mg/100g) respectively. Peroxide Values (PV) of cakes ranged from 0.32 to 15.8 meq/kg, with shea butter cake having lowest value. Total Bacterial Count (BC) ranged from 0.4x102 to 1.7x102 cfu/g while Fungal Count (FC) ranged from 8.00 to 10.00 x102 cfu/g. Avocado and/or shea butter improved Mg content of cakes, lowered Na content and reduced Free Fatty Acid (FFA) and PV of cakes. Cakes produce were not significantly different from one another in terms of taste and texture. Colour, aroma and over all acceptability of all margarine cake were better.

Keywords: Food Processing and Preservation, Avocado, Shea Butter, Cake, Sensory, Margarine.

Audience Take Away Notes

- The audience will learn of the effect the use of refined shea butter and avocado pear mesacarp as fat replacement had on nutrient composition, acceptability and microbiological characteristics of cakes
- The knowledge gained may be applied in the production of lower fat cakes
- This will help in production of healthier cakes that will have lower possibilities of trans-fat content
- Yes this research results can be utilized by Food Technologist and Nutritionists in the formulation and production of cakes with lower health risks
- Yes the results of the nutritional, microbiological and acceptability of the cakes made from the shea butter and avocado will present another way in which shea butter and avocado mesocarps may be used as plant fats
- The use of shear butter and avocado pear mesocarp in cake production will ensure the production of lesser processed cakes with no transfats and lesser content of saturated fatty acids

Biography

Prof Arisa studied Food Science and Technology at Federal University of Technology, Owerri, Nigeria and got a Master of Science degree in Food Technology from University of Ibadan, Nigeria in 1999. She joined Abia State University Uturu, later Bells University of Technology, Ota, Nigeria. She received her PhD degree in Food Technology from University of Ibadan, Nigeria in 2014. She teaches, conducts researches, supervises under graduate and postgraduate students and serves in university committees. She is a professor of Food Processing and Preservation and Director of Academic Planning, Bells University of Technology, Ota, Nigeria. She has published more than 50 research articles.

Prof. Nkereuwem Sunday Etukudoh[1*], Joyce EneOcheola Oki[2], Dr. MantuEnoChongs[3], Etukudoh Joy Sunday[4], Etukudoh Nkereuwem Sunday[5]

[1]Department of Heamatology, Federal College of Medical Laboratory Science and Technology, Jos University Teaching Hospital JUTH, Jos Plateau State

[2]Department of Basic Sciences, Federal College of Medical Laboratory Science and Technology, Jos University Teaching Hospital JUTH, Jos Plateau State

[3]Department of Microbiology, Federal College of Medical Laboratory Science and Technology, Jos University Teaching Hospital JUTH, Jos Plateau State

[4]Student Assistant Basic Sciences, Federal College of Medical Laboratory Science and Technology, Jos University Teaching Hospital JUTH, Jos Plateau State

[5]Student Assistant Microbiology, Federal College of Medical Laboratory Science and Technology, Jos University Teaching Hospital JUTH, Jos Plateau State

Standardization of orange flesh sweet potatoe juice fortified with lemon peel for Vitamin A nutrition intervention among school age children; A comparative analysis

Apart from identifying those at risk in the bid to address micro nutrient deficiency, approaches towards prevention, management especially interventions are crucial in tackling Vitamin A Deficiency (VAD). Vitamin A nutrition intervention approach should include an improved diversified diet, supplementation, fortification and bio fortification. Vitamin A Deficiency (VAD) is more prevalent in children under the age of five. Currently about 2.8 million pre-school children are at risk of blindness from VAD especially in low and middle income countries. In Nigeria, 29.5% of children below the age of five are deficient in vitamin A (serum retinol <0.70 micro mol/l) but highest in the dry savanna, 31.3%).This study was carried out to standardize Orange Flesh Sweet Potato (OFSP) juice which can be used for VAD intervention. Orange flesh sweet potato (243oz) was weighed with known quantities of ginger, clove, lemon peel, lemon juice, orange juice and sugar to sweeten, blended and strained out and one liter of water was added to produce the OFSP juice and this was noted as sample A. The Same quantity was also prepared but varied, sweetened using 506.6oz of date palm fruits with the addition of four (4) medium size cashew apple, blended and strained with the addition of one liter of water to produce the OFSP juice and was noted as sample B. Sensory evaluation, proximate and micronutrient analysis was carried out on the two samples. From the results obtained in the sensory evaluation, on a nine point hedonic scale, sample B had higher mean scores for attribute such as taste (7.50±1.23), colour (7.20±1.15), aroma (7.50±1.28), and mouth feel (7.30±1.34), but appearance and general acceptability for the two sample were similar. The result of the proximate analysis shows that there was no significant difference between the moisture contents of sample A and sample B. Crude protein was 1,76g/100g in sample A, and 1.94g/100g in sample B. Crude fiber was 0.05g/100g in sample A and 0.01g/100g in sample B. Ash content was higher (0,34g/100g) in sample B than in sample A (0.19/100g). Lipid was 0.04g/100g in sample A, and 0.02g/100g in sample B. Micronutrient analysis showed that vitamin A was 5.34mg/ml in sample A, and 4.22mg/ml in sample B. Vitamin D was also higher (0.090mg/l) in sample A, and 0.02mg/l in sample B, while lead was higher in sample A (0.061mg/l). Sample B had a higher arsenic (0.08mg/l) and iodine, (4.73mg/l). The Recommended Dietary Allowance (RDA) of vitamin A in children is between 400-600µg/ day, and this juice id more than able to provide for this especially for children. This juice can serve as intervention if the recipe is further standardized and well formulated.

Audience Take Away Notes

- Nutrition intervention is an all-inclusive process, one can prepare these recipe at home
- Rather than wait for a doctor of a dietician, this recipe, will help reduce the at risk children who are affected by vitamin A deficiency, hence reducing its prevalence in our hospitals and communities
- This research provides room for further studies
- This research provides a practical solution to the problem of Vitamin A Deficiency (VAD) as well as malnutrition

Biography

Professor Nkereuwem Sunday Etukudoh, the current Provost and Chief Executive Officer of the Federal College of Medical Laboratory Science and Technology Jos, Nigeria, a Federal owned Tertiary Health Educational Institution. He is a Fellow of both West African College of Medical Laboratory Science and the Medical Laboratory Science Council of Nigeria (MLSCN). He is a highly experienced professional who also was a former Acting Registrar/CEO of the MLSCN. He holds a PhD (2014) and MSC (1999) of Medical Physiology from the University of Ibadan, Nigeria, a highly acclaimed global institution. He is a prolific academic, sound and innovative administrator.

Norah BinSaeedan*, Khulood Alnabati
Reference Laboratory for Food Chemistry, Saudi Food & Drug Authority (SFDA),
Riyadh 11561, Saudi Arabia

Characterization of engineered Titanium Dioxide Nanoparticles (TiO_2-NP) in selected food products

TiO_2 an E171 manufacturer-made food additives, is extensively utilized as a colorant in drug and a food products. Some studies showed that most of confectionary and food items contain inexplicable particles. The aim of this article is the determine the size and structure of TiO_2 Nanoparticles in different food products. Ten food samples including coffee cream, white chocolate concentrate, frosting, gum, yogurt candy, hard candies and chewy candies were investigated for this purpose. The crystalline structure and particle size of TiO_2 were determined by using Powder X-ray Diffraction (PXRD) and Transmission Electron Microscopy (TEM). TEM images elaborated that a few of the extracted nanoparticles had rod-like shape, but most were spherical. Also, the particle sizes of TiO_2 have wide size distribution between 12-450nm. Thus, to avoid human health risk crucial factors such as size, and shape should be considered and regulated by food safety authorities.

Audience Take Away Notes

- The audience will gain in-depth knowledge about the crystalline structure and particle size of TiO_2 nanoparticles found in various food products
- The audience will learn about the potential health risks associated with exposure to TiO_2 nanoparticles and how size and shape can influence these risks
- The audience will discover how these findings can be applied to improve the quality and safety of food products and other potential applications of these nanoparticles in various industries
- Scientists and researchers in the fields of health and food can use this information to develop future studies focusing on the impact of nanoparticles on human health
- Industrial designers can use this information to improve manufacturing processes and ensure the production of safe and healthy products
- Enhancing awareness of the importance of carefully selecting ingredients in the food industry
- Driving innovation in the development of new, safer products that are health-friendly
- Increasing consumer confidence in manufacturers by offering safe and health-compliant products

Biography
Norah BinSaeedan, with a master's degree in chemistry from King Saud University, specializes in food safety. Focused on detecting heavy metals and nanomaterials in food, she ensures consumer health by analyzing contaminants. Norah started at the Saudi Food & Drug Authority, mastering advanced analytical techniques and optimizing methods to identify harmful substances in food matrices. Her studies on lead, cadmium, arsenic, and other toxins have made significant contributions to food safety.

Norma Angelica Santiesteban Lopez[1*], Mariana Calva Pérez[2], Teresa Galdys CeronCarrillo[1], Yesbek Rocio Morales Paredes y[1], Juan Chávez Medina[1]

[1]Facultad de Administracion, Benemérita Universidad Autonoma de Puebla, Mexico
[2]Facultad de Biotecnología, Benemérita Universidad Autonoma de Puebla Puebla 72592, Mexico

Development of a food supplement based on cricket flour with high nutritional value for older adults

Nutrition is a fundamental aspect that allows prolonging the life of a population, as well as preventing various cardiovascular and chronic degenerative diseases and diseases related to malnutrition, so this project aims to develop a food supplement based on cricket flour (*Acheta Domesticus*) added with Omega 3 and Omega 6, as well as essential amino acids in order to take advantage of its high nutritional value to promote its consumption in the supply of healthy foods aimed at this sector of the population. For its preparation, it was necessary to acquire Gricha brand cricket flour, omega 3 and 6, and fortified oatmeal obtained from a specialized pharmacy in the City of Puebla, Mexico. Three formulations marked as control, M1, M2 and M3, were evaluated; the variables evaluated were insect meal concentration and fortified oatmeal. A sensory evaluation was carried out on 150 untrained panelists with an age range of 60-70 years old. Using a 7-point hedonic scale, the attributes evaluated were odor, flavor, color, texture and general acceptability. The results of the sensory evaluation tests were analyzed and interpreted using the one-way ANOVA method and Tukey's test. The results obtained showed that the milk-based formulation with 32% insect flour, 40% fortified oats and 10% vitamins and minerals was the most accepted by the untrained judges, proving that there was a preference for the supplement developed with high nutritional value to promote its consumption in the supply of healthy foods for older adults.

Audience Take Away Notes

- Cricket flour in dietary supplements for older adults is a nutritious, sustainable and easily digestible option that can contribute significantly to health and well-being in the elderly
- With age, the digestive system can become less efficient at absorbing nutrients from food. Supplements can provide nutrients in forms that are easier to digest and absorb, ensuring that older adults get the nutrients they need to stay healthy
- Some older adults may experience a decreased appetite due to factors such as changes in their sense of taste, health problems or medications. Supplements can be a convenient way to ensure that they receive needed nutrients even if they are unable to consume an adequate amount of food

Biography

Dr. Norma Angelica Santiesteban Lopez studied Pharmacological and Biological Chemistry at the Benemerita Universidad Autonoma de Puebla (Mexico), later she studied a master's degree and doctorate in Food Science at the UDLAP, currently working in the Bachelor's Degree in Gastronomy at the Benemérita Universidad Autónoma de Puebla. She is currently a researcher at the affiliated site, a member of the BUAP Researchers' Register Journal INDEX publisher, advisor for Research and Graduate Studies, as well as a publisher and reviewer of books and articles in national and international journals.

Oumarou Diadie Halima[1*], Abdou Souley Roukaya[2], Balla Abdourahamane[2]

[1]Plant production department/ Faculty of Agronomy/ Abdou Moumouni University of Niamey, Niger

[2]Hygiene, Food and Nutritional Sciences Research Laboratory, Faculty of Agronomy, Abdou Moumouni University of Niamey, Niger

Evaluation of the nutritional potential of *Manihot esculenta* (Cassava) leaves in Baleyara, Niger Republic

Cassava leaves are a leafy vegetable with a high nutritional value. The present study was therefore conducted to contribute to the valorization of cassava (*Manihot esculenta*) leaves. The study consisted of a diagnostic survey to assess cassava leaves' production, marketing, and consumption. Another phase of this study was devoted to optimizing promising cassava leaf processing methods, and the final phase was devoted to the microbiological and organoleptic quality assessment of the produced products (tousmé, dried rehydrated tousmé, canned leaves and sauces). The diagnostic study results showed that cassava production is the prerogative of all farmers (100%) and is also the dominant crop in the village of Hollo N'zori. However, only 7.7% of traders are interested in selling cassava leaves, which are sold on Niamey's urban markets. The study revealed a cassava leaf consumption rate of 61.54%, with a generally high weekly consumption frequency of two (2) times a week. Most respondents transformed cassava leaves into tousmé (a local product made from cassava leaves) for 46.2%, and into sauce for 15.4%. In addition, the sensory evaluation showed that products made from cassava leaves had appreciable organoleptic characteristics such as taste, color, smell and texture (40% to 60% for most ratings) and better acceptability rates (26.7% to 40% for acceptable, 33.3% to 60% for moderately acceptable and 6.7% to 13.3% for very acceptable). These results will help boost the food value of *Manihot esculenta* leaves in Niger.

Keywords: Nutritional Potential, Leaves, Cassava, Niger.

Audience Take Away Notes

- The aim of this project is to boost the consumption of fruit and vegetables in general, and cassava leaves in particular. As Niger is a country where micronutrient deficiencies remain a public health problem, nutritional education based on the promotion of some leafy vegetables, especially from neglected species with high nutritional value, will enable us to effectively combat these deficiencies. This document will provide scientific evidence that will serve as a basis for nutrition education to further enlighten populations

Biography

Dr. Oumarou Diadie Halima, Senior Lecturer in Nutrition and Food Science Lecturer - researcher at the Faculty of Agronomy, Abdou Moumouni University, Niamey-Niger. Researcher at the Laboratoire de Recherche en Hygiène et Sciences Alimentaires et Nutritionnelles/FA/UAM.

Kavita Pandey
Department of FYIC-Bioanalytical Sciences, GN Khalsa College, Matunga, Mumbai, India

Implications of metabolites derived from gut microbiota on obesity

Research into the relationship between gut microbiota and obesity is expanding, revealing the complex connection between microbial composition and host metabolism. A diverse gut microbiota is typically linked to good health, contrasting with reduced diversity associated with conditions like obesity. Firmicutes and Bacteroidetes dominate the gut microbiota, with obesity often showing shifts in their relative abundance. Certain bacterial genera, including Akkermansia and Faecalibacterium, are diminished in obese individuals, while Lactobacillus reuteri levels may be elevated, potentially contributing to weight gain. Dysbiosis, characterized by disrupted symbiotic interactions, is implicated in obesity, cardiovascular disease, and type 2 diabetes, leading to a leaky gut and inflammatory activation. Meta-analyses confirm significant microbiota composition changes in obesity, particularly in Firmicutes, Bacteroidetes, and Proteobacteria, though the relationship between diversity and obesity remains intricate and incompletely understood. Strategies to combat obesity increasingly involve probiotics and prebiotics, which show promise in experimental and clinical studies for their anti-obesity effects. Probiotics can alter microbiota composition, influence hormones regulating appetite, increase energy expenditure, fortify the intestinal barrier, and hinder lipid absorption, while prebiotics modulate microbiota composition, enhance gut barrier function, reduce inflammation, and impact appetite regulation and fat metabolism. Despite promising prospects, further research is needed to unravel mechanisms and develop effective microbiota-based therapies for managing obesity and related metabolic disorders. The talk will summarize the developments in the field of research on the connection between obesity and gut flora.

Audience Take Away Notes

- Understand the relationship between gut microbiota composition and obesity
- Identify key microbial players implicated in obesity
- Explain the mechanisms by which probiotics and prebiotics influence obesity
- Evaluate the potential of microbiota-based therapies for obesity management

Biography
Dr. Kavita Pandey is heading the department of Five Years Integrated MSc in Bioanalytical Sciences at GN Khalsa College (Autonomous), Matunga. She holds an academic experience of over 13 years and is a passionate researcher, with a vast and rich experience in multidisciplinary research including areas like- Bioprocess technology, Functional foods, Probiotics, Prebiotics, Product development, Bioanalysis and Pharmaceutics. With her expertise she has trained several students through online and offline (hands-on training) programs including the very recent DST funded STUTI workshop on Bioprocess technology. She has 28 research publications and 3 book chapters to her credit and frequently contributes scientific communications to science magazines. Her work has been appreciated by experts in the field. Dr. Kavita has delivered multiple invited talks and national and international conferences in India and abroad. She is a life member of bodies like Association of Food Scientists and Technologists India (AFSTI) and Swedish South Asian Network on Fermented Foods (SASNET-FF). She is a driven individual with zeal to continuously learn and excel and welcomes collaborative work.

Philippe Sessou[1*], Santosh Keisam[2], Mariama Gagara[1,3], Gwladys Komagbe[1], Souaïbou Farougou[1], Jacques Mahillon[4], Kumaraswamy Jeyaram[2]

[1]Research Unit on Communicable Diseases, Laboratory of Research in Applied Biology, Polytechnic School of Abomey-Calavi, University of Abomey-Calavi, Abomey-Calavi, Benin

[2]Institute of Bioresources and Sustainable Development (IBSD), Imphal 795001, Manipur, India

[3]Central Livestock Laboratory, Niamey, Niger

[4]Laboratory of Food and Environmental Microbiology, Earth and Life Institute, Université catholique de Louvain, Louvain-la-Neuve, Belgium

Comparison of bacterial communities in naturally fermented dairy products from Northeastern India and West Africa

Traditional fermented milk products have been essential components of traditional food culture worldwide, including Doi of India, Kindourni, Fanire and Wagashi cheese of Niger and Benin. However, there are limited reports on the differences in bacterial communities that develop during the spontaneous mesophilic fermentation of cow milk across diverse geographical regions. In this study, we employed high throughput amplicon sequencing of the bacterial 16S rRNA gene to examine 44 samples of naturally fermented homemade milk products. We compared the bacterial community structures of these widely consumed foods from Northeast India and Western Africa. The spontaneous milk fermentation in these two geographically isolated regions shared lactic acid bacteria, mainly from Lactobacillaceae (Lactobacillus) and Streptococcaceae (Lactococcus). Indian samples exhibited high bacterial diversity, predominantly featuring Acetobacteraceae (Gluconobacter and Acetobacter) and Leuconostoc. Conversely, West African samples were abundant in Staphylococcaceae (Macrococcus). However, Wagashi cheese from Benin, made by curdling milk with proteolytic leaf extract of Calotrophis procera followed by natural fermentation, primarily contained Streptococcaceae (Streptococcus spp.). Our analysis also identified several potential pathogens like Streptococcus infantarius, an emerging foodborne pathogen which was found in Wagashi samples. An uncultured bacterium from Enterobacteriaceae was present in Kindouri and Fanire samples, and Clostridium spp. was detected in Doi samples from Northeast India. These findings highlight the need to address safety issues related to spontaneous milk fermentation and to develop technological interventions. Designing starter culture consortia for controlled milk fermentation can ensure the sustainable production of uniformly high-quality products with desirable functional and organoleptic properties.

Keywords: Fermented Milk Products, Miseq Amplicon Sequencing, Lactobacillus, Lactococcus, Gluconobacter, Acetobacter, Macrococcus Caseolyticus, Streptococcus Infantarius.

Biography

Dr. Philippe Sessou studied Standards and Food Quality Control at the University of Abomey-Calavi, Benin and graduated as Master of Science in 2010. He then joined the research group of Prof. Souaibou Farougou at the University of Abomey-Calavi. He received his PhD degree in Food Microbiology in 2013 at the same institution. Immediately after defending his thesis this year, he was hired as an Assistant Professor at the Polytechnic School of Abomey-Calavi, where he is currently serving. Currently, he is Associate Professor and has published more than 60 research articles in high impact journals.

Raghvendra KV[1*], Rajesh N Jagdale[2], Vidhan Chandra Roy[3]
[1]General Manager, Marketing, Juggat Pharma, Bangalore, India
[2]Chairman cum Managing Director, Juggat Pharma, Bangalore, India
[3]Deputy General Manager, Marketing, Juggat Pharma, Bangalore, India

Mulmina® mango recovery management drink: Retrospective study

Introduction: Optimal nutrition for the best immunological outcomes would be nutrition, which supports the functions of immune cells allowing them to initiate effective responses against pathogens and to resolve the response rapidly when necessary. Mulmina® Mango was developed for nutritional modulation of immune system. Nutritional modulation of the immune system has applications within the clinical setting, but can also have a role in healthy populations, acting to reduce or delay the onset of immune-mediated chronic diseases.

Material and Methods: In this retrospective study we have evaluated role of Mulmina® Mango, Mango Juice based health drink with bioactive of Mango, Centella asiatica, turmeric along with various vitamins and minerals in improving health condition in viral infection (COVID-19), bacterial infection (RTI in children) and immune boosting property post vaccination (COVID-19). Mulmina® mango was developed to improve antioxidant capacity and immunity of induvial compromised due to different etiologies. Total four Clinical Trials (CT), BMCRI CT (120 subject), SPARSH CT (50 Subject), Post vaccination CT (300 Subjects), RTI CT (125 subjects) conducted in different institutions of India, were reviewed. These trials were approved by institutional ethical committee of respective institution and registered with CTRI.

Result: As per the trial it was observed that Mulmina® Mango supplementation has a potential role in controlling the dysregulated immune system by reducing interferon gamma, increasing the immune shaping cells (CD4, CD8, IgA, IgG) to impart immune boosting effect. Mulmina® Mango helps in achieving higher antibody titer early and maintaining high titer for longer duration of time. Mulmina® Mango in Viral infection (COVID-19) along with Standard of care, has shown significant decrease in level of CRP and MDA than the control group. This indicated Mulmina® Mango supplementation can help in reduction of inflammation during infection cases.

These clinical trial shows, if standard of care is supplemented with Mulmina® Mango, it will increase SOD, CAT, and GSH in patient suffering form bacterial infection, Viral infection or during post vaccination. Dopamine level was found to be high after Mulmina® mango supplementation which helps in faster recovery and improve QoL in patient suffering from Viral and bacterial infection. There was no adverse effect was reported any of the study. This help us to conclude Mulmina® Mango was found to be safe and effective with the standard of care during these trials.

Conclusion: Looking at the above result we can conclude Mulmina® Mango will be an effective supplement for increasing Immunity & antioxidant capacity in different type of viral, bacterial infection and also in post vaccination case. Its safety data indicates its safe in age group of subjects.

Biography

Mr Raghvendra KV is a Postgraduate from Manipal University, India, in Department of Pharma Management in 2002. With 22 years of experience in Pharma industries and academy, He is currently working as General Manager, Marketing in Juggat Pharma, India. He is also a visiting faculty in different university in department of Pharmacy in India. His work focuses on making innovative pharmaceutical and nutraceutical available for costumer at cost effective ways.

Dr. Rubrinder Singh Sandhu*, Dr. Bhupinder Singh, Dr. Rajni Kamboj
Department of Food Technology, Ch. Devi Lal State Institute of Engineering & Technology (CDLSIET), Panniwala Mota, Sirsa, Haryana, India

Advancements in 3D printing technology for applications in the food industry

3D printing, has gained significant attention across various industries due to its capability to produce complex structures with great accuracy and customization. In past years, 3D printing emerged as a disruptive tool for culinary innovation, personalized nutrition, food waste utilization, production of complex customized edible designs and sustainable food. The worth of additive manufacturing in revolutionizing the food industry is explored as a contributor to achieving the sustainable development goals set out by the United Nations. Despite its promise, 3D printing in the food industry faces several challenges, including regulatory hurdles, safety concerns, and scalability issues. Moreover, the adoption of sustainable printing materials and waste reduction strategies is crucial for mitigating environmental impacts and promoting eco-friendly practices in food manufacturing. Ongoing research and development efforts aim to address these challenges and unlock the full potential of 3D printing in the food industry. Future innovations may include advancements in printing speed, resolution, and multi-material capabilities, enabling mass customization and on-demand production. Despite the existing challenges, ongoing research and industry collaborations are poised to drive innovation and unlock the full potential of 3D printing in shaping the future of food.

Keywords: 3D Printing, Food Industry, Culinary, Sustainable Food.

Audience Take Away Notes

- The latest innovations in food industry i.e. 3D printing
- Ways to promote culinary innovation, personalized nutrition, etc.
- How we can enhancing aesthetic value of a food product without addition of additives in it?
- Existing challenges faced by 3D printing in the food industry
- Latest jobs market in food industry is going to target 3D printing
- Large scope of future research

Biography

Dr. Rubrinder Singh Sandhu earned a B.Tech, M.Tech., Ph.D. (Food Technology) from institutes of notational esteem, India. He has more than 16 years of work experience that includes academics, administration and food industries experience. His research area includes food extrusion, value addition in rice extrudates, quality of honey, oil seed processing, structure and morphology of food products, process optimization, and storage characteristics of different foods. He has contributed over 20 scientific papers in different national/international journals and conferences. He is reviewer of JFST, Food chemistry, Food chemistry-X and Food chemistry advances journals. He is a Life member of many professional bodies.

Salifou Chakirath Folakè Arikè*, Honfo Serge Sonagnon, Kiki Pascal Sègbégnon, Youssao AbdouKarim Issaka
Department of Animal Health and Production of Ecole Polytechnique d'Abomey-Calavi, Universty of Abomey-Calavi, Benin

Evaluation of physico-chemical and sensory attributes of cheese Wagashi Gasireproduced in various agroecological regions in Benin

The distinct textures and flavors of wagashi crafted from cow milk in diverse regions of Benin, despite employing identical production techniques, remain a puzzle awaiting resolution. This study endeavors to unravel this enigma by scrutinizing the treatments applied to milk and delineating the traits of wagashi across varied agroecological zones in Benin. Carried out in five municipalities; Tchaourou, Savè, Dassa, Tori, and Lokossa, the research entailed surveys of twenty-five producers and the collection of seventy-five wagashi samples for comprehensive assessment of physicochemical and sensory attributes. Analysis revealed a common practice of storing milk at ambient temperature for approximately 52 minutes post-milking, followed by heating for 3 to 10 minutes within temperatures spanning 37.20±1.64°C to 58±1.58°C prior to processing. The wagashi production process encompassed six pivotal stages: milk filtration, coagulation, cooking, dripping, moulding, and cooling. *Calotropis procera* is the coagulant used by all producers with some variations in use. While production weights exhibited similarity in certain areas, disparities were evident elsewhere. Tchaourou boasted the highest dry matter content at 43.87 ± 2.82%, in stark contrast to Tori's lowest recorded level of 36.85 ± 3.65% ($p < 0.001$). Post-cooling pH measurements demonstrated significant divergence across regions, fluctuating between 6.59 ± 0.04 and 6.24 ± 0.42 ($p < 0.001$). Wagashi from Tori emerged with the whitest and firmest characteristics, registering a luminosity index (L*) of 95.00 ± 1.76 for its outer surface ($p < 0.001$) and a shear force of 6.54 ± 1.97 N ($p < 0.001$). Sensory evaluations indicated wagashi from Tchaourou received comparatively lower ratings across all parameters assessed. The temporal gap between milk extraction and processing, alongside variations in coagulation temperatures across regions, likely underpin the diversification in physicochemical traits among Benin's cheese productions.

Audience Take Away Notes

- Cheese production technology in Benin
- Natural coagulant used in the preparation of cheese in Benin
- The Physico-chemical characteristics of cheese from Benin

This research provides useful information for cheese industries and for the improvement of cheese from Benin technology

Biography:

Dr. Chakirath Salifou is Assistant Professor in Biochemistry, Food quality Control and Technology at the University of Abomey-Calavi in Benin. She obtained, her PhD did alternating beteween University of Liege (Belgium) and University of Abomey-Calavi (Benin) in Standars, Food Quality Contrôl and Technology in 2013 after a Master in same field in 2010 at the University of Abomey-Calavi. She also hold engineering degree in Animal Production and Health in 2005 at the same University. She is author for more than 60 scientific publications.

Seif Eldin A. Mohammed
Department of Bee Research, Environment and Natural Resources & Desertification Research Institute, National Center for Research, P. O. Box 6096–Khartoum, Sudan

Insights into the health-benefits of protein/peptides of royal jelly and honey

Royal Jelly (RJ) is a secretion of the hypopharyngeal and mandibular glands of young worker honeybees 5-15 days old. Larvae designated to be queens are lavishly fed RJ their entire lives, while all other larvae are disconnected from RJ and are provided a bee-bread three days after hatching. Major Royal Jelly Proteins (MRJPs) also familiar as apalbumins are among the main components of the RJ. Some research revealed that honeybee genome encodes nine MRJPs (MRJP1-MRJP9). Furthermore, honey bees do actively add MRJPs during, honey processing and ripening thus MRJPs are also found in the honey. MRJP1 is the most abundant and usually found in the oligomeric form known as apisin which is association of the 55 kDa monomers royalactin with apisimin and 24-methylenecholestrol. The biological functions of MRJPs remain unclear with exception of the roles of MRJP1 and its derived peptides known as jelleins. The most important biological activities of MRJP1 are antioxidant, antimicrobial, anti-cancer, hypotension, hypolipidemia, hypoglycemia and stimulation of cell proliferation, wound healing, anti-aging, neuroprotective role, and anti-inflammatory and immunomodulatory effects. In addition to the known role of MRJP3 in binding and stabilizing RNA and anti-allergic. Alongside with these functions a glycoprotein that containing three antimicrobial peptides: jelleins 1, 2, and 4 was isolated from natural honey. These peptides were found to cause cell-wall lysis for both Gram-positive and Gram-negative bacteria. Even though RJ has been discovered earlier, research on it started comparatively late compared with the honey. Therefore, this presentation hints insights to trigger researcher's attentions to towards a perfect food that carries a lot of health-benefits.

Keywords: MRJPS, Royalactin, Functional Food, Peptides.

Audience Take Away Notes

- The audience will get information of this presentation to pick some research problems for their future projects
- These projects will enhance their careers and jobs
- Faculty staff could gain new interventions to be used to expand their research networks or teaching programs

Biography

Prof. Dr. Seif Eldin studied Agricultural Sciences at the University of Khartoum, Sudan and graduated as BSc. & MSc. respectively, in 1993 & 1998. He then recruited as researcher in the National Center for Research (NCR). Then he awarded fellowship for PhD in the Sudan Academy of Science (Council for Environment, Biosciences & Advanced Technologies) in 2008. In 2009 He won TWAS-Postdoctoral Fellowship in biochemistry and joined the International Center for Chemical & Biological Center (ICCBs) and Dr. Pajwani Center for Molecular Medicine and Drug Research (PCMD), University of Karachi, Pakistan. He worked with the research group of Prof. Dr. M. Kamran Azim. Prof. Seif Eldin has published more than 50 research articles most of which in SI journals with impact factors. Also he has contributions in organizing and/or delivering talks to national, regional and international conferences. His research interest focuses on isolation/purification/characterization of novel compounds from natural products particularly those from bee hive products (honey/royal jelly/pollen/venom).

Shireen Punjabi[1*], Sriram Palepu[2], Sarah Ryan[3], Kenneth Wang[3], Jean Jeudy[3], David Mankoff[3], Robert Schnoll[4], Eliot Siegel[3], Charles White[3], Farouk Dako[3]

[1]Texas A&M University School of Medicine, College Station, TX, United States

[2]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, United States

[3]Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States

[4]Department of Psychiatry, University of Pennsylvania, Philadlephia, PA, United States

Dietary risk factors for lung cancer in never smokers

Introduction: Lung cancer has a well-established strong causal association with smoking, as 80-90% of lung cancers occur in smokers. Other associations, such as exposure to radon, asbestos, and secondhand smoke suggest that inhaled toxins is the predominant causative pathway. The risk of lung cancer has been found to be inversely associated with fruit intake in current and former smokers. There is disagreement in the literature about the association between beta-carotene and vitamin A and lung cancer. Additionally, alcohol consumption is associated with increased risk of breast, colorectal, esophageal, head & neck, and liver cancer. The Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial is a large population-based randomized trial of approximately 155,000 participants. This study utilizes the extensive, prospectively collected PLCO data to further assess specific components of diet that represent potential risk factors for LCINS.

Methods:

Data Collection:

- The PLCO de-identified dataset was obtained via the online Cancer Data Access System (CDAS). Data was collected through 2015.
- For the PLCO study, a total of 154,887 women and men aged 55 to 74 were enrolled between 1993 and 2001.
- Study participants were randomized into two arms:
- Screening-arm participants received a series of up to six annual screening examinations for prostate, lung, colorectal, and ovarian cancer.
- Participants in the usual care arm received routine health care from their health care providers.
- All participants completed a Baseline self-report Questionnaire (BQ).
- Screening-arm participants also completed a Dietary Questionnaire (DQX).
- A Dietary History Questionnaire (DHQ) was administered to all participants in 1998.
- All participants were administered the Supplemental Questionnaire (SQX) in 2006.

Statistical Analysis:

- **Descriptive statistics:** Mean (SD) for continuous variables and count (percentage) for categorical variables compared between smokers, never-smokers, and within never-smokers with and without lung cancer.
- **Inferential statistics:** Used Cox proportional hazards regression models to identify significant risk factors for LCINS incidence.
- Time from completion of questionnaires to study end used in survival model, with different follow-up times for collected risk factors.

- Multivariable models constructed separately for each questionnaire, using risk factors significant in univariate analysis.
- Final models built by removing variables using backwards selection at a significance level of 0.20; significance considered at 0.05. Analysis conducted using R version 4.0.2.

Results: Of 154,887 participants, 62,295 (40.2%) were never-smokers. The incidence of LCINS was 0.4%, one-tenth the 4% incidence of lung cancer noted in smokers. There was no evidence to suggest a different risk of developing LCINS based on:

- Drinking status
- Fruit consumption
- Beta-carotene usage
- Vitamin A usage

Conclusion: Our study based on a large prospective database demonstrates that no modifiable dietary factors included in DQX or DHQ are associated with a higher likelihood of developing LCINS. No statistically significant correlation was noted with drinking status, fruit consumption, beta-carotene usage, or vitamin A usage. LCINS is a distinct disease with unique genomic and epidemiologic features and requires further research, especially into the role of environmental exposures.

Audience Take Away Notes

- Understand the rising prevalence of LCINS in certain populations, and the pressing need to understand associated risk factors
- A refresher on important correlations between diet and cancer that are well-established in the literature (e.g. cured meats and colorectal)
- The four variables of interest, and why they were chosen. A summary of current literature surrounding their cancer/anti-cancer effects, as well our analysis
- Takeaways regarding the role of diet and nutritional intake in cancer in guiding patient interactions

Biography

Shireen Punjabi is a medical student at Texas A&M School of Medicine. Originally from Frisco, TX, Shireen earned her Bachelor of Science and Arts in Neuroscience from the University of Texas at Austin. Her academic journey has been marked by a commitment to serving underserved communities, exemplified by her service project presenting health workshops to Afghan refugees. Additionally, Shireen has been an active member of the Lifestyle Medicine Interest Group at Texas A&M for the past two years. With a growing interest in radiology and lifestyle medicine, Shireen brings a unique perspective to her studies and endeavors, aiming to integrate these areas to improve patient care and community well-being.

Cerón-Carrillo Teresa Gladys*, Carvente-Herrerías Emmanuel, Santiesteban-López Norma Angélica
Benemérita Universidad Autónoma de Puebla, México

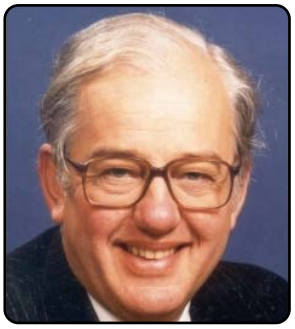
Formulation and characterization of a beetroot (*Beta vulgaris*) waste-feed sourdough bread

Sourdough is produced by fermentation between two main ingredients: water and flour. Fermentation occurs thanks to the interaction between yeast and bacteria. Beetroot peel is an agroindustrial waste containing high nutritional value due to its fiber, antioxidant, and phenolic content. This research aimed to create a sourdough fed with different concentrations of beetroot peel and to evaluate the sensory and quality characteristics of the finished bread. In this research, sourdough was fed with different concentrations of beetroot peel (5, 20 y 45 %p/p), and two concentrations of beetroot peel were to the bread formulation (0 and 45 %p/p), resulting in eight formulations, including control. A five-point Hedonic scale evaluation was conducted with 25 regular sourdough consumers, and an image analysis was made using Image J software. Data were analyzed with ANOVA and Tukey's test with 5% of significance. Significative differences were observed between formulations, including a high occupied area by alveoli in formulations with higher beetroot peel content. In the same way, a high-rated evaluation for sensory characteristics was observed for 45% of beetroot peel-fed sourdough bread. Beetroot peel has proven to have a good application in sourdough bread making.

Audience Take Away Notes

- How to use vegetable waste to make good quality bread?
- That vegetable waste is a good ingredient to feed sourdough
- Vegetable waste helps to improve sourdough bread's nutritional characteristics
- This research will help the audience to process vegetable waste and use it in sourdough bread-making
- Yes, this research could be useful in comparing ingredients used in fermentation
- Yes, this could reduce cost and environmental load as sourdough bread is prepared

Biography
Dr. Teresa Cerón studied food science at Universidad de las América Puebla, México, and graduated with an MS in 2008. She worked at Universidad del Mar in Oaxaca, where she joined the Food Innovation investigation group. She received her PhD degree in 2014 at the same institution, working on a research project entitled Pulsed electric field pre-treatment evaluation in different extraction methods over the chemicals characteristic and yield of three pepper species. She obtained the Full-time professor position at the Benemérita Universidad Autónoma de Puebla in the same year. She has worked on several research projects focused on decreasing food waste through sustainable food innovation.



Tim Ambler*; John Cawley PhD; Adam Biener PhD; Chad Meyerhoefer PhD; Yuchen Ding PhD; Tracy Zvenyach PhD, NP; B Gabriel Smolarz MD, MS; Abhilasha Ramasamy MS
London Business School, United Kingdom

Direct medical costs of obesity in the United States and the most populous states

Background: After a dramatic increase in prevalence over several decades, obesity has become a major public health crisis in the United States. Research to date has consistently demonstrated a correlation between obesity and higher medical costs for a variety of U.S. subpopulations and specific categories of care. However, by examining associations rather than causal effects, previous studies likely underestimated the effect of obesity on medical expenditures.

Objective: To estimate the causal effect of obesity on direct medical care costs at the national and state levels.

Methods: This study is a pooled cross-sectional analysis of retrospective data from the 2001-2016 Medical Expenditure Panel Surveys. Adults aged 20-65 years with a biological child living in the household were included in the study sample. Primary outcomes were individual-level medical expenditures due to obesity, overall, as well as separately by type of payer and category of medical care. Results were reported at the national level and separately for the 20 most populous states. The expenditure estimates were obtained from 2-part models of instrumental variables in which the respondent's Body Mass Index (BMI) was instrumented using the BMI of their biological child.

Results: Adults with obesity in the United States compared with those with normal weight experienced higher annual medical care costs by $2,505 or 100%, with costs increasing significantly with class of obesity, from 68.4% for class 1 to 233.6% for class 3. The effects of obesity raised costs in every category of care: inpatient, outpatient, and prescription drugs. Increases in medical expenditures due to obesity were higher for adults covered by public health insurance programs ($2,868) than for those having private health insurance ($2,058). In 2016, the aggregate medical cost due to obesity among adults in the United States was $260.6 billion. The increase in individual-level expenditures due to obesity varied considerably by state (e.g., 24.0% in Florida, 66.4% in New York, and 104.9% in Texas).

Conclusions: The 2-part models of instrumental variables, which estimate the causal effects of obesity on direct medical costs, showed that the effect of obesity is greater than suggested by previous studies, which estimated only correlations. Much of the aggregate national cost of obesity—$260.6 billion—represents external costs, providing a rationale for interventions to prevent and reduce obesity.

Disclosures: Novo Nordisk financed the development of the study design, analysis, and interpretation of data, as well as writing support of the manuscript. Cawley, Biener, and Meyerhoefer received financial support from Novo Nordisk to conduct the research study on which this manuscript is based. Smolarz and Ramasamy are employees of Novo Nordisk. Ding and Zvenyach have no conflicts to declare.

Veerle Vanheusden
DG SANTE European Commission, European Union

Recent and future developments of EU legislation on mineral oil hydrocarbons in food

The health risks related to the contamination of food with mineral oil hydrocarbons will be explained, as well as the sources through which food gets contaminated and the upcoming EU legislation to regulate these substances in food.

Mineral Oil Hydrocarbons (MOHs) are chemical compounds derived mainly from crude oil, but also produced synthetically from coal, natural gas and biomass. They can contaminate food at various stages of the production chain and via the transfer from food contact materials. These contaminations are avoidable by following good practices. In 2023 the European Food Safety Authority updated its risk assessment on MOHs in food and concluded that the current exposure to Mineral Oil Saturated Hydrocarbons (MOSH) does not raise a health concern. Because the margin for a safe exposure to MOSH is limited, this conclusion might change, when mitigation measures would be dropped. As Mineral Oil Aromatic Hydrocarbons (MOAH) show genotoxic and carcinogenic properties, the current exposure to MOAH would raise health concerns. Following this assessment 3 legal proposals are under discussion in the EU:

- A Regulation on maximum levels for MOAH in food
- A Recommendation on the monitoring of MOSH and MOAH in food and the application of mitigation measures. These recommendations will be supported by indicative levels. When the concentrations of MOHs exceed these ILs, investigations should be carried out towards the causes of the contamination and mitigation measures should be applied.
- A Regulation on the methods for the sampling and analysis of MOHs in food.

Pending the adoption of these measures, the EU Member States already started enforcing quantities of MOAH in food at or above the following limits of quantification:

- 0.5 mg/kg for dry foods with a low fat/oil content (≤4% fat/oil)
- 1 mg/kg for foods with a higher fat/oil content (> 4% fat/oil, ≤50% fat/oil)
- 2 mg/kg for fats/ oils or foods with >50% fat/oil.

EU Member States agreed on the basis of Article 14 of the General Food Law (Reg. (EC) No 178/2002) to withdraw and, if necessary, to recall products from the market, when the concentrations of MOAH exceed these limits, because food shall not be placed on the market, if it is unsafe.

Biography

Veerle Vanheusden holds a PhD in Pharmaceutical Sciences (medicinal chemistry) from the University of Ghent (Belgium), where she graduated in 1999 as a Pharmacist. Before joining the European Commission she worked in the private pharmaceutical sector (organic chemistry and analytical chemistry). Veerle Vanheusden joined the European Commission in 2013, where she worked for 4 years as a policy officer in the Unit Pesticides and Biocides of the Directorate General for Health and Consumers. Since September 2017 she moved to the DG SANTE unit dealing with Food processing technologies and novel foods, where her main areas of activity are the EU policy and legislation on contaminants in food.

Vidhan Chandra Roy[1*], Raghvendra KV[2], Rajesh N Jagdale[3]
[1]Deputy General Manager, Marketing, Juggat Pharma, Bangalore, India
[2]General Manager, Marketing, Juggat Pharma, Bangalore, India
[3]Chairman cum Managing Director, Juggat Pharma, Bangalore, India

Mulmina®: The natural blend with clinically proven efficacy

Introduction: Mutated bacteria and virus along with polluted air, water and food makes difficult for individual's immune system to keep us health or recover faster. The hypothesis of meta medicine that most of diseases can be cured by our own immune fails. Thus, the need to support immune system is need of next generation. Mulmina® was developed as a palatable drink approved for used as an antioxidant, immunity booster and stress reliver in 2018. The two variant Mulmina® Mango and Mulmina® Amla orange is being used by various consultant across India and giving wonderful results in the patient.

Method: Mulmina® Mango is elixir of Curcuma longa, Centella asiatica in Mango pulp enriched with various vitamin and minerals. Mulmina® Almla Orange contains Embolic officinalis and Citrus reticulata along with various vitamin and minerals. Safety and efficacy of Mulmina® was studied in various preclinical and clinical studies in different medical research institute. Immune busting activity, Oxygen Radical Absorbance Capacity (ORAC) evaluation, Antistress effect, Antiallergic activity and protective effect against chemotherapy was evaluated in preclinical studies. Mulmina® was also evaluated for is antioxidant, immune boosting, and Stress reliving property in various trial with different condition like pre-eclampsia, PCOS, infertility, viral infection, and post vaccination.

Result: In pre-clinical studies Mulmina® exhibits a dose dependent immunomodulatory activity and reduce elevated level of cortisol in stressed mice which occurs because of stress related dysregulation of HPA axis. Mulmina® produced significant decrease in the TNF-α, a pro-inflammatory cytokine that plays role in the pathogenesis of stress-related disorders like anxiety and depression. Mulmina® stabilizes mast cell degranulation induced by compound 40/80. Mulmina® increases immunity by reducing elevated level of milk induced leucocytosis and eosinophilia. Anti-allergic activity was confirmed by inhibiting histamine induced contraction of smooth muscle. Mulmina® with its all variants offers over 4000 ORAC units per 200ml Tetra pak. Thus, fulfils daily requirement of antioxidants.

In Human Study, Mulmina® has improved immunity by increasing IgA and IgG. Mulmina® supplementation improves production of antibody postvaccination and maintain high antibody titer for longer duration. Mulmina® is only supplementation with proven antioxidant benefits in reducing oxidative stress in follicular fluids. Mulmina® increases levels of Superoxide Dismutase (SOD), Catalase (CAT) and Glutathione highlighting the antioxidant potential. Mulmina® helps to reduce C Reactive Protein (CRP) level, which indicates excellent anti-inflammatory activity. Mulmina® has a potential role in controlling the Cytokines levels and helps in reduction in inflammation. Studies have proved that Mulmina® increases Dopamine level (feel-good hormone).

Conclusion: Mulmina® blend has proven efficacy in hastening recovery from disease, reducing inflammation and decreasing oxidative stress. over 1,200 patients have been tested in the various clinical trials, and no side effects have been reported. Overall, Mulmina® ® has demonstrated superiority as a supplement in diverse patient groups, providing improvement in oxidative stress and inflammation, with good safety and tolerability.

Biography

Mr Vidhan Chandra Roy holds a Postgraduate from Manipal University, India, in Department of Pharma Management in 2012. He has presented papers in on patient education in various conferences including FIP Istanbul. Last 12 years he has worked in the Indian pharma industry. He has focused on development of sustainable low-cost natural product with health benefits.

Weina Liu[1, 2*], Lingxia Li[1,2], Zhengtang Qi[1,2]
[1]Key Laboratory of Adolescent Health Assessment and Exercise Intervention of Ministry of Education, East China Normal University, Shanghai 200241, China
[2]College of Physical Education and Health, East China Normal University, Shanghai 200241, China

Sugar-sweetened beverage consumption retarded weight gain but not induced depression and anxiety-like behaviors in mice

Aims: To assess the effects of Sugar-Sweetened Beverage (SSB) consumption and exercise on behaviors.

Methods: Twenty-four male mice were divided into four groups: the Water+Sedentary (WS), the SSB+Sedentary (CS), the Water+Exercise (WE), and the SSB+Exercise (CE). After three-month of interventions, forced swim test (FST), Open Field Test (OFT), and Morris Water Maze (MWM) were conducted. Then, mRNA levels of MAO-A, COMT, and 5-HT1A and protein levels of synapsin, STAT3, A2AR, CRTC1, CREB, and BDNF were measured.

Results: Under a similar baseline body weight condition, SSB consumption reduced the weight gain from the 3rd week ($p<0.05$, or $p<0.01$). Exercise decreased the escape latency in the CE group when compared to the CS group on day5 ($p<0.01$) and increased the time in the target quadrant in the WE group than the WS group on day4 ($p<0.05$) and 5 ($p<0.01$) during MWM. No significant differences were found during the FST and OFT. COMT mRNA level was increased after SSB consumption ($p<0.05$), but no differences were found in the MAO-A and 5-HT1A mRNA levels and the concerned biomarkers, all of which were previously reported to be associated with depression and anxiety-like behaviors.

Conclusion: SSB consumption reduced weight gain but not result in depression and anxiety-like behaviors in mice. Therefore, the behavioral effects of exercise were not significant. This is not consistent with the results of previous epidemiological surveys of humans.

Audience Take Away Notes

- Our study is a first finding that SSB consumption leads to reduced body weight in mice, which is inconsistent with previous results, and the phenotype is reproducible. Therefore, our study may provide inspiration for other researchers regarding the effect of SSB consumption on metabolism
- Based on our results, researchers of SSB consumption could expand their studies from a biological or neuroscientific perspective, which may provide the general public with a new perspective, i.e., are there really only metabolic adverse effects of SSB consumption?
- The purpose of this study was to further confirm the association between carbonated beverage consumption and behavioral abnormalities in humans, and to construct a mouse model to determine the effects of SSB intake and exercise on depression and anxiety-like behaviors in mice

Biography

Dr. Liu studied Sport psychology at the Shenyang Sport University, China and graduated as MS in 2005. She then joined the research group of Prof. Ji at the College of Physical Education and Health, East China Normal University. She received her PhD degree in 2009 at the same institution. After two years postdoctoral fellowship supervised by Pro. Ni at the Naval Medical University, China she obtained the position of an Professor at the College of Physical Education and Health, East China Normal University. She has published more than 50 research articles in SCI(E) and CSSCI journals.

SEPT

16-18

Joint Event

6th Edition of Euro-Global Conference on

Food Science and Technology &

6th Edition of the International

Nutrition Research Conference

POSTER PRESENTATIONS

Chaorong Jiang
The People's Hospital of Shapingba District, Chongqing

Effect of *Clostridium butyricum* capsules combined with inulin-based probiotics on the gut microbiota and outcomes of irritable bowel syndrome with predominant Diarrhea

Objectives: Irritable Bowel Syndrome (IBS) has become a global functional gastrointestinal disorder. Irritable Bowel Syndrome with predominant Diarrhea (IBS-D) is due to disturbed gut-brain interactions. Although IBS-D was not a life-threatening disease, it seriously affected the quality of life of patients and caused great economic and mental burden to individuals, society and families. The purpose of this trial is to investigate the therapeutic effect of *Clostridium butyricum* capsule combined with inulin-based probiotic on patients with IBS-D and to analyze the alterations in the intestinal flora of the patients.

Design: Prospective, randomized, controlled study.

Setting: One hospital in China (XXX hospital).

Patients: A total of 80 patients aged 35-75 years with primary diagnosis of irritable bowel syndrome with predominant diarrhea were included in this study. Participants were randomly divided into the Combined group (n=40) or the Placebo group (n=40).

Interventions: Participants in the Combined group received live *Clostridium butyricum* capsules (oral, 400 mg/dose, 3 times/day) combined with probiotics (inulin, oral, 6 g/day), and the Placebo group received visually corresponding indistinguishable placebo decoction. All patients will receive treatment for eight weeks and their efficacy and safety will be evaluated on the 8th week.

Outcomes and Main Results: The primary outcome was the difference between the two groups in the IBS Symptom Severity Scale (IBS-SSS) score, IBS Global Improvement Scale (IBS-GIS) score, and symptom relief after 8 weeks of treatment. Secondary endpoints were differences in the diversity of the gut microbiota and the abundance of the bacteria between the two groups at the 8th week. Compared to the placebo group, the combination group significantly improved IBS-GIS (6.7±1.6 vs. 5.2±1.2, P=0.003) and IBS-SSS scores (329.5±60.6 vs. 319.2±51.2, P = 0.042), as well as domain-specific scores related to gastrointestinal flatulence (P=0.028) and bowel habits (P = 0.018) at the 8th week. Alpha diversity analysis of the gut microbiota suggested that the Shannon index was significantly higher in the Combined group than in the Placebo group (3.33±0.66 vs. 2.94±0.77, P=0.040). The difference in beta diversity of the gut microbiota was statistically significant between the two groups (P<0.05). The abundance of Clostridia, *Clostridium butyricum*, Prevotella, Pseudomonas and Lactobacillus was significantly higher in group C compared to group P (P<0.05).

Conclusions: In IBS-D patients, *Clostridium butyricum* capsule combined with inulin-based probiotic significantly improved patient prognosis, possibly related to the fact that the combination therapy altered the patient's gut microbiota.

Keywords: Irritable Bowel Syndrome; Randomized Controlled Trial; *Clostridium Butyricum*; Probiotics; Gut Microbiota.

Tinak Ekom D.C.[1*], Mahot H.C.[1], Sontsa A.M.[1], Madou C.[2]

[1]Regional Laboratory for Biological Control and Applied Microbiology, Institute of Agricultural Research for Development (IRAD), Yaounde, Centre, Cameroon

[2]Regional Entomology Laboratory, Institute of Agricultural Research for Development (IRAD), Yaounde, Centre, Cameroon

Development of a biopesticide an alternative to the abusive and irrational use of chemical pesticides for the preservation of human, animal, and plant health: The case of the Cocoa tree

In Cameroon, the expected cocoa production seems difficult to achieve in view of several factors including diseases and pests. Insect pests, particularly *Sahlbergella singularis*, commonly called mirids usually cause damage to the cocoa tree which result in the reduction of the abundance of young fruits by up to 10% and the reduction in the weight of ripe pods by 12%. To combat this insect, conventional insecticides are the only effective control method, but creating more problems than they solve: pollute the environment, risk for deterioration of human, animal, and plant health. It therefore appears urgent to develop biological control methods through the development of biopesticides which appears to be a first-choice alternative for concerns about respect for the environment and preservation of health. Hence the interest of our study which consisted of developing a biopesticide formulation whose active ingredient was isolates of the fungus *Beauveria bassiana* which are pathogenic towards mirids. This fungus was isolated from cocoa leaves. Five isolates of *Beauveria bassiana* were tested under controlled laboratory conditions on parameters such as fungal radial growth, spore production and viability as well as insecticidal potential against the fourth and fifth nymphal stages of mirids. The selected isolates were subsequently the subject of a compatibility study with a certain number of additives generally used in the development of biopesticides. The results showed that the germination percentage was between 75.83% and 97.41%. Of these five isolates, two IRADA21 and IRADA30 stood out with maximum growth on PDA medium on the fifteenth day of observation, respectively 3.67 cm and 3.07 cm, and a higher number of spores, 9.84.108 spores/ mL, and 1.12.109 spores/mL respectively. On the ninth day post-inoculation, the mortality of mirids presenting a fungal outbreak varied between 14% and 93% with the best rates for the two isolates mentioned above. On the other hand, the parameters mentioned above and evaluated in the presence of adjuvants such as glycerol, refined palm oil, Tensiofix and tween 80 also showed good compatibility between the latter and the two isolates chosen. Locally isolated *Beauveria bassiana* is virulent against mirids and appears to be an asset for biological control programs.

Audience Take Away Notes

- Why produce biopesticide?
- How to produce biopesticide?
- Benefits of the use of biopesticide
- The use of biopesticide on cocoa cultivation and security
- Potential Risks of the use of cocoa production and consumption

Biography

Dr. Danielle Christelle Tinak Ekom joined the research groups of Prof. Ennaji at Laboratory of Virology, Microbiology and Quality/Eco Toxicology and Biodiversity, Faculty of Sciences and Technology Mohammedia, Casablanca Hassan II University Morocco and Dr. Iraqi at the Biotechnology Research Unit, National Institute for Agronomic Research (INRA), Morocco. She received her PhD degree in Microbiology and Plant Biotechnology in 2013 at the same University. During her PhD studies, she was grant by L'OREAL–UNESCO for Women in Science. She works now as Research Associate at Institute of Agricultural Research for Development (IRAD) in Cameroon. She has published about 17 research articles in SCI(E) journals.

Laribi-Habchi Hassiba[1, 2*], Amrouche Zoheir[3]

[1]Laboratory of Functional Analyzes of Chemical Processes, University Blida 1, Algeria
[2]Loboratory of Energy Applications of Hydrogen, University Blida 1, Algeria
[3]Biological Department, Faculty of Science of the Nature and the Life, University of Djilali Bounaam, Khemis Miliana, Algeria

Application of a formulation based on a bio polymer as an acaricide against the parasite (Varroa) of the domestic bee *Apis mellifera*

Bio-pesticides from bimolecular are characterized by their degradability in the environment, their low toxicity to humans and their mode of action on pests. One of the most damaging pests is probably the Varroa destructor, parasitic mite of the honey bee *Apis mellifera*, it causes significant economic losses and is one of the causes that devastates the bee population in Algeria and in the world. Several therapeutic trials have been conducted to combat this parasite. However some commercially available synthetic chemicals have proved ineffective over time due to the development of mite resistance and toxicity to the bee. The use of new non-toxic and biodegradable molecules in the treatment of varroasis is essential. It is in this context that an in vivo therapeutic trial was tested for a period of a few days as a means of biological control based on a bio-polymer (chitosan) extracted from a marine biomass (shrimp shell). Prepared in weak organic acid in gel form at a lethal dose of 1.5% (w/v). This gel was deposited in the hive in the same manner of another synthetic product (Amihraze) usually used by Algerian beekeepers.

The results showed that the product administered in the hives has a mortality rate greater than 80% with a total safety towards the bee (0% mortality and no behavioral disturbance) in comparison with the treatment based on an acaricide synthesis (Amitraze) showing 85% mortality followed by a 1/3 loss of the bee colony.

Our study showed that chitosan treatment is more effective than amithraze treatment in reducing the parasite population inside the apiary.

Biography

Laribi-Habchi Hassiba is a Professor at SAAD Dahlab Blida 1 University, where she obtained an Habilitation to Direct Research (HDR). She holds a Doctorate and a Magister in Environmental and Pharmaceutical Biotechnology obtained respectively in 2013 and 2005 at the National Polytechnic School of Algiers and a state engineer diploma in Biological Engineering in 1990 at the University of Technological Sciences Of Algiers. Professor H. Laribi has supervised and supported several doctoral students and has produced numerous scientific works on biomolecules of microbial, animal and plant origin such as international patents of invention (WIPO) and renowned international publications and their application in the pharmaceutical, beekeeping, biochemical, enzymatic, molecular biology and environmental.

Laura Thedy*, Luca Vernetti-Prot, Sabina Valentini
Institut Agricole Régional, Aosta Valley, Italy

Aromatic and fatty acid profile of fontina PDO cheese produced in Aosta Valley during summer Alpine Pasture

Fontina is an Italian semi-hard and semi-cooked cheese, labelled PDO, typically produced in Aosta Valley made from raw cow milk from Valdostana breed and ripened for at least 3 months in natural caves. In the summer this cheese is directly manufactured in alpine farms located in different valleys and where cows are grazed and moved progressively to higher altitudes. As is well known, there is a close correlation between the aromatic and fatty acids profiles with the cattle diet in environments with different forage species. This is found both in milk and in its processed such as Fontina PDO cheese.

The aim of this work was to support thea practice of seasonal migration of livestock in high mountains to produce typical cheeses with high nutritional value and having unique organoleptic characteristics. For this purpose, analysis have been carried out on Fontina cheese produced in three mountain pastures (A_1, A_2, A_3), located up to 2300 m above sea level, over three consecutive summer seasons. The samples were collected three per season at 90 days of ripening and analysed in duplicate or triple depending on the type of determination. The analysis of fatty acid composition via GC/MS and GC/FID was carried out according to *Jiang et al.* (1996) and *FIL-IDF*: 182-1999 for the extraction of the lipid component and to *Cadiddu et al.* (2009) for the qualitative and quantitative determination of the fatty acids methyl ester extracted. The qualitative and semi-quantitative evaluation of the volatile organic compounds profile, on the other hand, was carried out using SPME-GC/MS, referring to *Bergamaschi and Bittante* (2017), with some modifications.

Results obtained, considering only the statistically significant differences ($p<0.05$ HSD Tukey test), allow us to say that the alpine Fontina PDO cheese reflects the high nutritional characteristics of summer milk, large amount of PUFA, CLA and a good ω6/ω3 ratio, confirming what has already been reported in the past by other authors. Among all, the Fontina PDO cheese of the A1 pasture was the richest in CLA (90% CLA 9c,11t) which are equal to 2.00 g/100 g fat (mean value) and with the best ratio ω6/ω3 that is around 1.50 (mean value). Regarding mountain Fontina PDO cheese aromatic profile, it is known that altitude and botanical composition of pasture are factors determining the sensory quality of cheeses. In fact, results show that cheese, especially those from the A3 mountain pasture, was rich in compounds such as alcohols (ethanol and 3-methylbutanol), esters (ethylacetate) and terpenes (α-pinene), which notoriously produce an aroma rich in fruity notes.

This study confirms that a strictly correlation exists between the aromatic and fatty acids composition of diet and of dairy products. Therefore, it is necessary to promote maintenance and enhancement of the biodiversity typical of the alpine pastures and transhumance in order to produce high quality standards Fontina PDO cheese very appreciated by consumers.

Audience Take Away Notes

- The audience will know Fontina PDO alpine cheese both from a point of view of organoleptic and nutritional qualities
- The audience can learn typical analytical techniques for the analysis of fatty acids and volatile aromatic compounds in cheese
- This study can be a stimulus to develop innovative and sustainable agronomic practices for the enhancement of alpine turf
- The results show that it is necessary to support the alpine transhumance both for the maintenance of the alpine territory biodiversity and for the production of cheeses with high nutritional and organoleptic value

Biography

Master's degree in Pharmaceutical Chemistry and Technology with a major in Food Chemistry, and qualified as a pharmacist at The University of Turin. She then joined the chemical laboratory of the Institut Agricole Régional, Aosta to deal with Aosta Valley agri-food products applied research. She has over 20 years of hands-on expertise in flame ionization gas chromatography or mass spectrometry gas chromatography. The publications made concern almost exclusively this field. Interested in deepening the world of essential oils and their application in agriculture.

Małgorzata Mizgier[1*], Barbara Więckowska[2], Dorota Formanowicz[3], Giovanni Lombardi[4,5], Alicja Brożek[3], Marcin Nowicki[3], Krzysztof Durkalec-Michalski[1], Witold Kędzia[6], Grażyna Jarząbek-Bielecka[6]

[1]Department of Sports Dietetics, Chair of Dietetics, Faculty of Health Sciences, Poznan University of Physical Education, 61-871 Poznan Poland

[2]Department of Computer Science and Statistics, Poznan University of Medical Sciences, 60-806 Poznan, Poland, Poznan University of Medical Sciences, Poznan 60-806, Poland

[3]Chair and Department of Medical Chemistry and Laboratory Medicine, Poznan University of Medical Sciences, Poznan 60-806, Poland

[4]Laboratory of Experimental Biochemistry and Molecular Biology, IRCCS Istituto Ortopedico Galeazzi, 20157 Milano, Italy

[5]Department of Athletics, Strength and Conditioning, Poznań University of Physical Education, 61-871 Poznań, Poland

[6]Division of Developmental Gynaecology and Sexology, Department of Perinatology and Gynaecology, Poznan University of Medical Sciences, 61-758 Poznan, Poland

Effects of AIDiet intervention to improve diet quality, immuno-metabolic health in normal and overweight PCOS girls: A pilot study

This study was conducted in two groups of girls with PCOS (Polycystic Ovary Syndrome) categorized as slim (group N) and Overweight-to-Obese (group Ov/Ob). The study's primary outcome was to assess the impact of a 12-week Anti-Inflammatory Diet (AIDiet) intervention, without energy deficit, on daily diet quality improvement, evaluated according to the KIDMED index. The secondary outcome was improving inflammatory, redox, hormonal, and metabolic statuses. In the study, which was completed by 13 girls from the Ov/Ob group and 19 girls from the N group, a significant improvement in the mean KIDMED score was obtained. Moreover, the intervention significantly improves concentration of Total Antioxidant Capacity (TAC), fasting insulin, and the Homeostatic Model Assessment for Insulin Resistance (HOMA-IR) index, in the Ov/Ob group, while both groups experienced a reduction in the concentration of Interleukin (IL)-1 and IL-6, Tumour Necrosis Factor (TNF-α), and androstenedione. The AIDiet intervention effectively improved the quality of the subjects' diets, which was associated with the improvement of hormonal and immuno-metabolic markers. However, these changes in normal weight patients were observed regardless of body weight reduction. ClinicalTrials.gov Identifier NCT04738409.

Keywords: Polycystic Ovary Syndrome, Adolescents, Obesity, Inflammation, Mediterranean Diet.

Biography

Małgorzata Mizgier is an Associate Professor at the Poznan University of Physical Education, Department of Sports Dietetics, Chair of Dietetics, Faculty of Health Sciences. She holds an MSc in Biology at Adam Mickiewicz University and Dietetics at Poznan University of Life Sciences. Ahe completed her Ph.D. in the Department of Hygiene and Human Nutrition, Dietetics Division, at Poznan University of Life Sciences. She achieved her habilitation at Poznan University of Medical Sciences, in the field of health sciences and medical sciences. The focus of her current research includes the influence of diet and physical activity on females with Polycystic Ovary Syndrome, menstrual disorders, infertility, and pregnancy.

Nashi K. Alqahtani[1, 2*], Maged Mohammed[1, 3]

[1]Date Palm Research Center of Excellence, King Faisal University, Al-Ahsa 31982, Saudi Arabia

[2]Department of Food and Nutrition Sciences, College of Agricultural and Food Sciences, King Faisal University, Al-Ahsa 31982, Saudi Arabia

[3]Agricultural and Biosystems Engineering Department, Faculty of Agriculture, Menoufia University, Shebin El Koum 32514, Egypt

Preservation and quality enhancement of fresh dates using innovative edible Gum Arabic coating

Due to the high perishability and limited shelf life of fresh fruits, there are challenges in their storage and distribution. Consequently, there is an increasing demand for new preservation approaches to maintain the quality of fresh fruit, such as date palm fruit at the Khalal stage, while prolonging their shelf life. Using an innovative edible coating derived from Gum Arabic displays the potential to conserve and enhance the quality of fresh dates. This method has successfully reduced decay after harvesting, preserved optimal soluble solids content, and prevented the decline of titratable acidity in fruits. The study examines the viability of employing a Gum Arabic coating to extend the freshness and quality of dates. Gum Arabic, sourced from the Acacia tree, is acknowledged for its capacity to create a protective layer that guards against moisture loss and microbial spoilage. The coating application covers the date surface with a Gum Arabic solution, forming a transparent and adaptable barrier. To evaluate the efficacy of the Gum Arabic coating in maintaining date quality, a series of experiments were carried out in controlled storage conditions. Fresh date palm fruits, harvested at the peak of the Khala stage, were divided into two sets: one set was coated with Gum Arabic, while the other was left uncoated as the control. Both sets were then stored under normal conditions, with periodic assessments of various quality parameters. The most critical factor affecting the shelf life of fresh date palm fruits is the loss of fruit moisture during storage, which can lead to shrinkage and changes in texture and fruit shelf life. Results demonstrate that the Gum Arabic coating effectively reduces moisture loss from the dates, preserving their fullness and firm texture during storage. This is attributed to the barrier characteristics of the Gum Arabic film, which inhibits water evaporation from the fruit surface. Moreover, the findings indicate that the Gum Arabic coating significantly extends the shelf life of fresh dates by safeguarding fruit quality parameters and maintaining their sensory and nutritional attributes over a 62-day storage period using a 10% Gum Arabic concentration. Evaluations of the coated date fruits sensory aspects revealed no substantial variances ($p>0.05$) in overall acceptability compared to the control group. The Gum Arabic coating does not introduce unwanted tastes or smells to the dates, thus preserving their inherent sensory qualities. This is crucial for ensuring customer satisfaction and improving the market competitiveness of the coated dates. The research offers valuable insights into sustainable preservation methods for fresh dates and progressing postharvest practices in the date palm sector. Further improvements in coating compositions and application techniques can enhance the scalability and efficiency of this innovative preservation method, supporting the continuous growth and sustainability of the date palm industry.

Audience Take Away Notes

- Individuals will comprehend the implementation of Gum Arabic coating to extend the shelf life of fresh dates, thereby reducing wastage and facilitating prolonged storage and transportation periods
- How the coating sustains dates sensory and nutritional attributes will be explored, ensuring their appeal and nutritional value retention for end consumers
- The enhancement of visual appeal and texture in Gum Arabic-coated dates will be elucidated, illustrating their increased market value and heightened consumer satisfaction
- A sustainable method for preserving fresh dates through Gum Arabic coating, devoid of chemical preservatives, will be demonstrated, offering advantages to producers and consumers
- The use of Gum Arabic coating improves date quality and shelf life, reducing postharvest losses and increasing profits. This helps producers meet the demand for better products, enhancing competitiveness and market share
- Coating dates with Gum Arabic gives a competitive edge by offering longer-lasting, higher-quality products. This reduces spoilage, improves inventory management, and increases customer satisfaction. Retailers benefit from the market appeal of these dates, attracting more customers and boosting sales
- Gum Arabic-coated dates offer fresher, more flavorful, and nutritious products with a longer shelf life. This leads to increased satisfaction and loyalty among consumers. The natural preservation of these dates aligns with preferences for healthier and eco-friendly food choices
- Yes, his study provides chances for faculty to enhance or incorporate their research into teaching
- Yes, the study presents a practical method to extend the shelf life and improve the quality of fresh dates, rationalization postharvest procedures, cutting down on waste, and guaranteeing uniform product quality, thus increasing efficiency and effectiveness for food industry professionals
- Yes, the research provides the latest information that can assist in design problems related to the preservation of fresh produce
- Sustainability
- Cost-effectiveness
- Enhanced food safety
- Market differentiation
- Global market access
- Health benefits
- Customization
- Regulatory compliance
- Community impact
- Research opportunities

Biography

Dr. Nashi khalid Alqahtani is the Director of the Date Palm Research Center of Excellence at King Faisal University, Saudi Arabia. He received his PhD degree in food science and technology from University of RMIT, Australia. Earlier in his professional career, he held the position of the Director of Supporting Studies the Supervisor Center at King Faisal University. He was also the Rapporteur of the Committee of the Deans of Colleges of Agriculture and Veterinary Medicine in the GCC. He participated in more than15 regional and global conferences and workshops. In addition, he was actively involved as a member or head of key committees at KFU. Dr. Nashi published more than 70 scientific papers in regional and international high impact factor reputable journals.

Insaf.Ouldbrahim*, Ahmed.Belgacem
Faculty of Mechanical and Processes Engineering, USTHB, BP 32, El-Alia, Bab-Ezzouar, 16111 Algiers, Algeria

Cryogenic engineering: Innovating corrosion inhibitors for agri-food sector sustainability

This study aims to compare two grinding techniques, namely ambient temperature grinding and cryogenic grinding, to produce environmentally friendly inhibitors and nano-inhibitors of corrosion, with potential applications in the agri-food industry. Cryogenic grinding, a widely used method in various industries, involves grinding materials (green waste) at extremely low temperatures using cryogenic liquids such as liquid nitrogen (-196 degrees Celsius). This approach produces ultra-fine particles or even nanoparticles, ensuring uniform dispersion of components, thus enhancing corrosion inhibitory properties, including nano-inhibitors. In contrast, conventional ambient temperature grinding may encounter difficulties in achieving the desired powder fineness and uniformity of component dispersion. Our goal is to evaluate the effectiveness of both methods to determine their suitability for producing corrosion inhibitors and nano-inhibitors from environmentally friendly materials, for potential applications in the agri-food sector. Ingeniously, cryogenics applied to the agri-food industry examines nano-inhibitors obtained through cryomilling for their ability to minimize corrosion in steels used in the agri-food sector. Assessments include electrochemical analyses and accelerated corrosion tests in the laboratory, along with in-situ trials to evaluate their efficacy under real conditions. The results shed light on the effectiveness of these nano-inhibitors in corrosion prevention, offering promising prospects to enhance equipment durability and ensure food safety.

Keywords: Cryogenic Grinding, Nano-Inhibitors, Agri-Food Industry, Electrochemistry.

Audience Take Away Notes

- **Audience Benefit:** Professionals in corrosion prevention and nano-materials science in the agri-food industry will learn about the effectiveness of different grinding techniques in producing corrosion inhibitors. They can optimize manufacturing processes for better corrosion prevention and product durability
- **Job Impact:** This research helps professionals in material selection and corrosion prevention to make informed decisions, improve equipment durability, maintain food safety standards, and potentially reduce maintenance costs
- **Use by other Academics:** Academics in nano-materials science, cryogenic process, corrosion engineering, and agricultural engineering can utilize these findings to expand their research

Biography

Dr. Insaf Ould Braahim is a lecturer at the University of Science and Technology Houari Boumediene (USTHB) in Algeria. She holds three degrees from USTHB: process engineering with a focus on cryogenics (2008), a magister degree in process engineering (2012), and a Ph.D. in science in industrial process engineering (2018) with highest honors. With nearly six years of experience as a research associate and senior researcher at the CRTI Research Center, she contributed to the nanomaterials team for corrosion prevention. She is an ambassador for Remtech Europe.

Paulina Średnicka[1*], Paulina Emanowicz[1], Michał Wójcicki[2], Marek Roszko[3], Edyta Juszczuk-Kubiak[1]

[1]Laboratory of Biotechnology and Molecular Engineering, Department of Microbiology, Prof. Wacław Dąbrowski Institute of Agricultural and Food Biotechnology–State Research Institute, Rakowiecka 36 Street, Warsaw, Poland

[2]Department of Microbiology, Prof. Wacław Dąbrowski Institute of Agricultural and Food Biotechnology – State Research Institute, Rakowiecka 36 Street, Warsaw, Poland

[3]Prof. Wacław Dąbrowski Institute of Agricultural and Food Biotechnology–State Research Institute, Rakowiecka 36 Street, Warsaw, Poland

Influence of Bisphenol A and its analogues on human gut microbiota composition and metabolic activity in an in vivo model

Food contamination by chemicals migrating from Food Contact Materials (FCM), such as Bisphenol A (BPA) and its analogs (BPS, BPF, TMBPF), is a significant concern. Recent studies have highlighted potential interactions between these xenobiotics and the Gut Microbiota (GM), which can influence their biological effects. This research aimed to investigate the impact of Bisphenols (BPS, BPF, and TMBPF) on human GM composition, taxonomic changes, and metabolome profiles. We conducted in vitro batch cultures using GM samples from healthy donors (n=15). 16S rRNA amplicon sequencing revealed significant differences in β diversity (Bray-Curtis dissimilarity) between control and treatment groups. There was a significant decrease in α diversity (Shannon Effective count) in the BPA, BPS, and BPF groups compared to the control. BPA and BPF treatments also resulted in a significant reduction in Effective Microbial Richness. All bisphenols studied decreased the relative abundance of the Bacteroidetes phylum. BPA, BPS, and BPF reduced total SCFA concentrations in GM post-fermentation fluids. Untargeted metabolome profiling using LC-HR-MS/MS (Orbitrap) showed that BPA, BPS, and BPF significantly impacted the gut metabolome. After 48 hours of GM culturing with bisphenols, quantitative analysis (LC-HR-MS/MS) indicated significant reductions in BPA, BPS, and TMBPF concentrations (21%, 12%, and 89% respectively). Additionally, we observed a significant decrease in the estrogenic activity of BPF after 48 hours of cultivation with human GM. Metabolites from gut microbiota cultured with BPA and BPF significantly decreased cell viability compared to the control. Our results provide evidence in favor of a multidirectional effect of bisphenols on human GM.

Audience Take Away Notes

- Attendees will gain an understanding of how bisphenol exposure alters the gut microbiota, specifically noting changes in microbial diversity and the relative abundance of key bacterial phyla
- The presentation will detail how bisphenols influence the metabolome of the gut microbiota, showcasing significant shifts in metabolite profiles and their potential biological implications
- The findings will emphasize the need for stringent regulatory policies concerning bisphenol usage in food contact materials, highlighting potential risks to human health
- Researchers can leverage these findings to explore further the interactions between environmental chemicals and the gut microbiota. The methodologies discussed can be applied to their studies, enhancing the depth and scope of their research
- Regulatory professionals can use this information to advocate for stricter safety standards and better evaluation protocols for food contact materials, ensuring consumer safety
- Encourages collaboration between microbiologists, toxicologists, chemists, and regulatory bodies, fostering an interdisciplinary approach to addressing complex health issues

Biography

Paulina Średnicka is a Microbiologist and Molecular Biologist. She is a PhD student at the AgroBioTech PhD doctoral school. Conducting her research on the interactions between human gut microbiota and endocrine-disrupting chemicals (EDCs). The research focuses on determining the impact of EDCs on the metabolic activity and taxonomic profile of human gut microbiota in vitro. She graduated from the University of Lodz with a specialization in microbiological biotechnology. Her scientific interests include toxicogenomics and the impact of xenobiotics on gut microbiota. Currently she is expanding her competencies in bioinformatics in postgraduate studies at the Polish-Japanese Academy of Information Technology.

Sabina Valentini*, Mathieu Merlet, Tania Flutto, L. Vernetti-Prot
Institut Agricole Régional, Aosta, Aosta Valley, Italy

Proteolytic peptides as molecular markers of quality in fontina PDO cheese typically produced in Aosta Valley mountain pasture

Fontina PDO is a semi-cooked cheese, typically produced in Aosta Valley (North West of Italy), made from whole raw milk of autochthonous cattle breeds (Red Pied, Black Pied, and Chesnut) and strains selected in this mountain region and ripened for at least 80 days on wooden shelves.

During the aging process of the cheese, caseins undergo degradation by endoproteases and exoproteases presents in raw milk, in the rennet and released by starter LAB and lactic acid bacteria naturally presents in milk (NSLAB). This important biochemical process, called proteolysis, produces peptides and Free Amino Acids (FAA) that can have an important role as bioactive peptides promoting human health, as kokumi peptides contributing to the aroma profile and as biomarkers for quality and authenticity of PDO cheese.

Identifying the peptides produced during the different stages of maturation allows obtaining more information about the proteolysis process that takes place in the cheese. In addition, the identification of peptides that typically accumulate in a specific cheese during maturation allows for a better understanding of the maturing process and, therefore, it allows acting on the various stages of production in order to improve the quality of the finished product. This knowledge can also potentially be very useful in ensuring the authenticity of a cheese, particularly those whose quality is related to a specific environment of origin, as Fontina PDO cheese.

An HPLC/ESI-MS method, modified from Sforza et al. 2012, was used to profile peptides during cheese ripening. Samples analyzed were curd, Fontina at 48 hours, 60 days, 90 days and draining whey produced in three Aosta Valley alpine pasture. Peptide were identified using an internal database, literature data and online databases. 419 peptides were detected in all samples analyzed, with some having single, multiple, or no identifications. About 2.1% of these peptides were present in all matrices; Fontina at 60 days of ripening shown the highest number of peptides (190). Curd had a higher proportion of potential bioactive peptides (27.7%), notably antihypertensive peptides (70.7%). All matrices contained markers of raw milk, □-casein A_2, and various peptides affecting human health, taste, and flavor. Peptide with YQEPVLGPVRGPFPIIV sequence and m/z 941 is an example of raw milk biomarker found in all samples analyzed. Some peptides were unique to specific sample matrices or alpine pastures, suggesting their potential as molecular markers for verifying the authenticity of Fontina PDO cheese concerning milk quality, cheese-making, aging, or alpine pasture origin.

Further research is recommended to expand the specificity of analyses and accurately identify each peptide. This could lead to a method for verifying the quality, origin and authenticity of Fontina PDO cheese in order to preserve this cheese and its typicality.

Audience Take Away Notes

- By understanding the peptide profiles in Fontina PDO cheese, producers can improve quality control, verify authenticity, enhance health benefits, optimize production processes, educate consumers, and drive further research. This comprehensive approach ensures that Fontina PDO cheese maintains its renowned quality and distinctive characteristics, while also meeting the evolving demands of the market and health-conscious consumers
- The study opens new avenues for research into cheese ripening and proteolysis. Researchers can build on these findings to explore other bioactive peptides and their effects on human health. Furthermore, food scientists can use the methodology described to refine and develop more precise analytical techniques for studying other cheeses and dairy products
- This research provides a wealth of material that other faculty can use to enhance their own research and teaching. From exploring new dimensions in food science and nutrition to providing practical, hands-on learning experiences, the findings on peptide profiling and proteolysis in Fontina PDO cheese offer valuable insights and applications across multiple disciplines
- By leveraging the insights from peptide profiling and proteolysis in Fontina PDO cheese, designers can develop innovative tools and systems that significantly improve quality control, authentication, production efficiency, product development, and regulatory compliance. These practical solutions not only simplify various aspects of cheese production and verification but also make the overall process more efficient and reliable
- The research on peptide profiling and proteolysis in Fontina PDO cheese significantly enhances design accuracy and provides valuable new information. By integrating these insights into quality control, product development, and production optimization, designers can create more accurate, efficient, and innovative solutions. This not only improves the quality and authenticity of Fontina PDO cheese but also drives continuous improvement and innovation in the industry

Biography

Sabina Valentini is the head of Laboratory Research Unit with over 25 years of hands-on expertise and a robust background in biochemistry applied to agrifood and functional foods. Her academic credentials include a Master's degree in Biology and a Ph.D. in Experimental and Molecular Pathology. She known for her scientific creativity, innovative thinking, and initiative. Her leadership skills encompass coaching collaborators, managing conflicts, and providing both technical and motivational guidance. Her technical expertise is particularly strong in Liquid Chromatography-Mass Spectrometry (LC-MS), Proteomics, and the study of Bioactive Peptides and Nutraceuticals in foods. She is also a Co-inventor of Italian patent n. 102021000011006 - New isolated strain of Lactobacillus and its uses.

Tania Flutto*, Mathieu Merlet, Laura Thedy, Rita Pramotton, Simona Zenato, Luca Vernetti-Prot, Sabina Valentini
Institut Agricole Régional, Aosta Valley, Italy

Biochemical characterization of YoAlp®: A sheep-fermented milk obtained with autochthonous starter cultures

Fermented milks are a source of bioactive molecules with different potential benefits on human health and may be considered as functional foods. This study focused on YoAlp®, a newly isolated Lactic Acid Bacteria (LAB) mixture used for the production of innovative food products.

Sheep milk and fermented milk have been collected and a biochemical characterization, by a proteomic approach, GC/MS and microtiter plate assay methods, have been conducted to evaluate their peptide, fatty acid and aromatic profile, and to assess potential health promoting effects. Furthermore, a comparison between Sheep-Fermented Milks (SFM) made with commercial starter cultures and YoAlp®, has been performed, to evaluate the potential of the new mixture.

Peptide's profile comparison shows a higher number of amino acidic frequencies using autochthonous starter cultures than commercial ones. Among these peptides, 20.78% and 29.87%, respectively, are supposed to be potentially bioactive. Furthermore, in both products, the fatty acid profile was similar to that of origin sheep milk, and concerning aromatic profile, YoAlp® shows yogurt typical aromatic assets. Considering bioactivity, ACE inhibition is high for both samples. Similar values, as expected by peptide profile analysis, have been obtained. Even in the case of antioxidant capacity, peptide profile bioactivity prediction has been confirmed by the assay showing a DPPH inhibition higher for SFM than for YoAlp®, but this difference is not statistically significant. Local strains of lactic acid bacteria seem to work as well as the commercial, but ensuring, at the same time, the preservation of biodiversity and typicality. However, further analyses are needed to understand microbial proteolytic activities and to investigate gastric digestion resistance of bioactive peptides.

Audience Take Away Notes

- The audience will get to know how to design and characterize an innovative product from a biochemical point of view
- The audience will have a chance to specialize in their job, by the learning of a transferable model that can be applied in multiple food research contexts
- This research could provide the impetus for the creation of innovative food products
- This research could provide a relatively simple and efficient strategy to enhance biodiversity, fundamental pillar supporting all life on earth

Biography

Tania Flutto began her career with experimental placements in a mainly biochemical-cellular environment, her career is proceeding as a researcher in the agrifood sector. Relying on the importance of teamwork, in a context such as that of the research laboratory, she specializes in product innovation, with a particular focus on the characterization and valorization of supply chain waste. Her work rediscovering unexpected functional aspects, through the development and use of modern molecular biology techniques. She is also a Co-inventor of Italia patent (n° 102021000011006) New isolated strain of Lactobacillus and its uses.

Ulbad P. Tougan [1, 3]*, Hamidou Bah[2], Camille D. Guidime, André Thewis[3]

[1]Department of Nutrition and Agro-Food Science, Faculty of Agronomy / University of Parakou, Republic of Benin. BP 2760,
Abomey-Calavi, Republic of Benin

[2]Institut supérieur agronomique et vétérinaire Valéry Giscard d'Estaing of Faranah

[3]Unit of Nutrition and Animal Sciences Engineering, Gembloux Agro-Bio Tech, University of Liege, Passage des Déportés, 2, 5030
Gembloux, Belgium

Effect of frying oil reuse on Polycyclic Aromatic Hydrocarbons (HAP), transfatty acids and acrylamide contents in fried Mackerel fish involved in the sauce "Moyo" in Benin

Moyo is one of the main sauces of the gastronomy of Benin. It is essentially based on raw ingredients: Freshtomatoes, onion, a few drops of vegetable oil, salt, pepper and fish. Traditionally, it is prepared without heating and is eaten with dough (akassa, piron, kom). The current study aims to determinate the contents of degradation compounds produced during the interaction between the Mackerel fish and frying oils during the preparation of "Moyo" food in Parakou. Therefore, the peroxide index and the neoformed contaminants (Trans fatty acids, acrylamide, polycyclic aromatic hydrocarbons) were determined. This work was performed on 15 samples of reused frying oils and 15 samples of fried makerel fish collected from Moyo food restaurant in the town of Parakou. The results obtained indicated that the peroxide index of the reused oil is 10.48 meqO2/kg and is slightly higher than the values recommended by the Codex Alimentarius fixed at 10 meqO2/kg. The Trans-fatty acid concentration of the reused frying oils was 50.23%. The average acrylamide content of fried Makerel fish (56.3 µg/kg) is higher than the value recorded in the frying oil (17.76 µg/kg). The contents of the different HAPs determined in the reused oils are higher than those of the mackerel fish. The Benzo (a) pyrene concentrations of the both reused frying oil and mackerel fish are lower than the EU standard 1881/2011. Regular intake of mackerel fish fried using reused oils can lead on health risks to consumers as reused frying oils generate chemical contaminants that are harmful for human health.

Audience Take Away Notes

- Regular intake of mackerel fish fried using reused oils can lead on health risks to consumers as reusedfrying oils generate chemical contaminants that are harmful for human health.

Biography

Dr. Ir. Tougan Polycarpe Ulbad is Associate Professor of Nutrition and Food Acience at the University of Parakou in Benin and Head of the Department of Nutrition and Food Sciences. He is also currently the Vice- Coordinator of the Program of Food Security and Nutrition of the African and Malagasy Council for Higher Education (CAMES). He had completed his PhD in Food standards, quality control and technology at the age of 26. He had been postdoctoral researcher at Gembloux Agro Bio Tech/ University of Liège (Belgium) from 2014 to 2017. He is authors of 83 scientific articles published in reputed journals and 43 oral presentations in the field of Nutrition, Food Security and Quality. Furthermore, he is Laureate of 6 Awards and Prizewinner of 10 research grants of ARES-CCD, HAAGRIM Project, TWAS-UNESCO and CAMES.

Alrujib.Y*, Aldosari.Z, Aljardan. A, Alqahtani. A, Alqahtani. S
Saudi Food and Drug Authority (SFDA), Saudi Arabia

Determination of aflatoxins (B1, B2, G1 and G2) in chilli powder and cumin sold at traditional stores in Riyadh city, Saudi Arabia

Aflatoxins are naturally occurring Mycotoxins produced by certain molds (fungi) and can be found in food. Mold growth can occur either before harvest or after harvest, during storage, on/in the food itself often under warm, damp and humid conditions. Aflatoxins are toxic and among the most carcinogenic substance after entering the body. The study aims to estimate and determine the level of contamination with aflatoxins (B1, B2, G1 & G2) in spices (chili and cumin), which are sold in traditional markets in Riyadh. Also aims to provide information that may help decision makers and risk assessors to identify the current situations of such stores in terms of the contamination levels of aflatoxins in the products. In Mar and Aug 2020, 49 samples of chili powder and 55 samples of cumin were collected from three different traditional markets in Riyadh city. All samples were coded and stored at 1-8°C until analysis. Samples were prepared and extracted with immunoaffinity column. The analysis was performed according to ISO 16050:2003 using HPLC-FLD. The results of chili powder and cumin samples for (total aflatoxins, B1, B2, G1 and G2) were (27 and 0.149, 25.1 and 0.063, 1.8 and 0.005, 0.022 and 0.056 and 0.016 and 0.019), respectively. In chili powder, AFB1 was the most detected toxin followed by AFB2, AFG1, and AFG2 (88%, 81.6%, 2.04%, and 2.04%), respectively. The highest AFB1 value was (241.4 µg/kg), followed by AFB2 (19.7 µg/kg), then AFG1 (1.1 µg/kg), and finally AFG2 toxin was detected in (0.76 µg/kg). In cumin, AFB1 was the most detected toxin followed by AFG1, AFB2, and AFG2 (9.09%, 9.09%, 5.4%, and 3.6%), respectively. The highest AFB1 value was (1.08 µg/kg), followed by AFG1 (0.827 µg/kg), then AFB2 (0.155 µg/kg), and finally AFG2 toxin was detected in (0.83 µg/kg). The study showed that some of the chili powder and cumin products sold in the traditional markets are contaminated with aflatoxins. Chili powder was most frequently contaminated with aflatoxins which requires close attention to such product

Audience Take Away Notes

- The study showed that some of the chili powder and cumin products sold in the traditional markets are contaminated
- Chili powder was most frequently contaminated with aflatoxins which requires close attention to such product
- Aims to provide information that may help decision makers and risk assessors to identify the current situations of such stores in terms of the contamination levels of aflatoxins in the products

Biography

Mr. Yasser Alrujib Laboratory expert (supervisor) at Saudi Food & Drug Authority–Riyadh from 2010. Studied Chemistry at King Saud University. Participated in design and writing phases in the research published on 27 June 2023 to evaluate the incidence and total nutritional exposure to aflatoxin through food products in the Kingdom of Saudi Arabia. participated in design and writing phases in the research published on Oct, 2023 to Effect of microwave, ultraviolet and pulsed electric field treatments on ochratoxin A level and physicochemical quality attributes of paprika powder.

Jumanah Alamir, Lama Almaiman, Yasser Alrujib*, Rayan Alhamidi, Bandar Alowais, Saqer Alhussain, Mohammed Bin Eid
Saudi Food and Drug Authority (SFDA), Saudi Arabia

Occurrence and dietary risk assessment of aflatoxins in Saudi Arabia

Background: Chronic dietary exposure to Aflatoxins (AFs) is considered as a major public health concern, since they are recognized as hepatotoxic, mutagenic, genotoxic, and immunosuppressive toxins. Several food commodities consumed in Saudi Arabia (SA) are susceptible to AFs contamination due to warm and humid climate.

Aim: this study aimed to represent and analyze the levels of AFs (AFB1, AFB2, AFG1, AFG2) and total Aflatoxins (AFT) extrapolated from the National Program for Monitoring Contaminants (NPMC) in 4 food groups mostly contaminated with AFs. In addition to estimate the chronic dietary intake of AFs for adult group and calculate the related cancer risk arriving from the exposure.

Methods: During the period of 2015 to 2020, 2,388 food samples were collected and analyzed under the NPMC for the occurrence of AFs using HPLC. Chronic dietary exposure assessment to each individual AF and AFT were then carried out based on the occurrence levels and the consumption data. Margin of Exposure (MoE) approach was applied to characterise the risks of AFB1 exposure based on the BMDL10 value of 0.4 µg/kg Body Weight (bw) per day, and the potential cancer risk for the incidence of HepatoCellular Carcinomas (HCC) was estimated using the carcinogenic potency of AFs in SA.

Results: The results revealed that 12.1% of the analyzed samples were contaminated with AFs ranging from not detected to 4.8 µg/kg and from 1.08 to 5.6 µg/kg in the mean Lower Bound and Upper Bound (LB and UB) concentrations respectively. Highest percentage of positive samples was found in spices, while the highest concentration of AFT was noticed in nuts and seeds group, which was found in peanut butter. The mean chronic dietary intake of AFB1 for adult population was estimated to be 0.21 and 0.55 ng/kg bw per day. Cereals and grains contributed the most to AFB1 exposure and rice was the most food item in contribution. MoEs were estimated at 1902.4 and 722.1 while the estimated liver cancer risk ranged between 0.002 and 0.008 cancer cases/year/ 100,000 persons indicating a potential risks for population in SA.

Conclusion: Based on GEMS/Food cluster diets tool, cereals and grains contributed the most to AFB1 exposure and rice was the most food item in contribution followed by peanut butter. Even though AFs contamination in SA is low, AFs considered as potent genotoxic contaminant; therefore, surveillance on AFs in food commodities and monitoring should continue to protect the public health and to guarantee that human exposure levels are kept as low as possible.

Audience Take Away Notes

- The study showed that some of the chili powder and cumin products sold in the traditional markets are contaminated
- Chili powder was most frequently contaminated with aflatoxins which requires close attention to such product
- Aims to provide information that may help decision makers and risk assessors to identify the current situations of such stores in terms of the contamination levels of aflatoxins in the products

Biography

Mr. Yasser Alrujib Laboratory expert (supervisor) at Saudi Food & Drug Authority–Riyadh from 2010. Studied Chemistry at King Saud University. Participated in design and writing phases in the research published on 27 June 2023 to evaluate the incidence and total nutritional exposure to aflatoxin through food products in the Kingdom of Saudi Arabia. participated in design and writing phases in the research published on Oct, 2023 to Effect of microwave, ultraviolet and pulsed electric field treatments on ochratoxin a level and physicochemical quality attributes of paprika powder.

BOOK OF ABSTRACTS

We wish to meet you again at our upcoming events

7th Edition of Euro-Global Conference on

Food Science and Technology

September 08-10, 2025 | Valencia, Spain and Online

https://food-chemistry-technology-conferences.magnusgroup.org/

8th Edition of

the International Nutrition Research Conference

September 08-10, 2025 | Valencia, Spain and Online

https://magnusconferences.com/nutrition-research/

Questions? Contact

Phone: +1 (702) 988 2320 | Whatsapp: +1 (540) 709 1879

e-mail: secretary@magnusconference.com