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Exploring Science • Promoting Innovation

GSFST2022

Global Summit on Food Science and Technology

March 17, 2022

Virtual

The Scientistt
Bangalore, Karnataka, India
Contact: +91 77 99 83 5553
Email: contact@thescientistt.com

FOREWORD

Dear Colleagues,

It is a great pleasure to announce that The Scientistt will host the Global Summit on Food Science and Technology (GSFST2022) will be held during March 17-19, 2022 as a Virtual Conference (Webinar).

GSFST2022 aims to bring together the renowned researchers, scientists and scholars to exchange ideas, to present sophisticated research works and to discuss hot topics in the field and share their experiences on all aspects of Food Science and Technology.

The GSFST2022 will be a 3 days event that means to gather the key players of the Food Science and Technology community and related sectors. This event is launched with the aims to become an established event, attracting global participants, intent on sharing, exchanging and exploring new avenues of Food Science and Technology-related scientific and commercial developments.

A wide-ranging scientific program consisting of plenary lectures, keynote lectures, Invited lectures, parallel sessions, as well as poster sessions for young scientists covering all topics in Food Science and Technology will be scheduled. This conference provides a wonderful opportunity for you to enhance your knowledge about the newest interdisciplinary approaches in Food Science and Technology.

Moreover, the conference offers a valuable platform to create new contacts in the field of Food Science and Technology, by providing valuable networking time for you to meet great personnel in the field.

We look forward to your participation in GSFST2022 webinar on March 17-19, 2022.

COMMITTEES

Organizing Committee

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Baojun Xu	Beijing Normal University-Hong Kong Baptist University, China
Marilia Duque Pereira	University College London, UK
Michael Conlon	Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

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SPEAKERS

P: Plenary Speaker
K: Keynote Speaker
I: Invited Speaker

Index alphabetical order

Virtual Presentations

Chee Kong Yap

Department of Biology Faculty of Science, 43400 UPM Serdang, Selangor, Malaysia

From Monitoring Heavy Metal Soil Data to Human Health Risk Assessments: A Review and Insight

Abstract
Based on 53 publications, published between 2001 and 2017, a comprehensive review on the topic of heavy metal soil pollution on the aquatic and urban environment, was done. Based on this review, three major points are found, first: studies of heavy metals in the soils are widely reported in the literature, in at least 20 countries, second: importance of valid monitoring heavy metals in the soils, and third: children are the more susceptible groups exposed to soil pollution than adults. The present review focused on the discussion of second and third points. It can be concluded that these monitoring data on the environmental soils are crucial for the human health risk assessment of the heavy metals.

Keywords
Soil management; Monitoring; Heavy metal pollutants.

Biography
Chee Kong Yap is working as a full professor in Universiti Putra Malaysia (UPM) since 2021. Prof Yap is an academician for more than 18 years in UPM and 23 years as a researcher.Prof Yap has supervised more than 80 undergraduates and 30 postgraduate students in the fields of ecotoxicology, environmental biology, environmental sciences, water quality and ecotoxicological genetics. Prof Yap has published more than 320 papers in refereed academic journals, 5 books (three of them published in NOVA Science Publishers, USA) and 32 book chapters. Until July 2021, 204 of them have now been indexed in Elsevier'sScopus with an H-index of 30(>2761 citations).Prof Yap has also been invited in honorary as Editorial Board members for more than 30 international academic journals. Prof Yap has been an invited visiting researcher at National Institute of Environmental Studies, Tsukuba (Japan). Internationally, Prof Yap has been an invited visiting professor at Nihon University (Japan) and Hokkaido University (Japan), and an invited visiting researcher at Kobe University (Japan) and Kobe College (Japan). So far, Prof. Yap has one accepted patent during his patent filing and application in November 2019, UPM.

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I. S. Ismail[1, 2]
I. S. Ismail[1, 2*], M. S. A. Bustamam[1], C. M. Chong[3] and K. Shaari[1]
[1]Natural Medicine and Products Research Laboratory, Institute of Bioscience, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia;
[2]Department of Chemistry, Faculty of Science, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia;
[3]Department of Aquaculture, Faculty of Agriculture, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

Immunomodulatory Effects of Isochrysis galbana on Red Hybrid Tilapia (Oreochromis Sp.) Elucidated by Metabolomics Approach

Abstract
The potential of an indigenous species of Malaysian microalgae, Isochrysis galbana (IG), in improving aquaculture health through its utilization as an immunomodulating agent was investigated. The nuclear magnetic resonance (NMR) fingerprints successfully exhibited the highest concentrations of fatty acids and carotenoids in ethyl acetate (EtOAc) extract and amino acids and carbohydrates in aqueous (Aq) extract. Some important metabolites in EtOAc extract were further confirmed using and ultra-high performance liquid chromatography tandem mass spectrometry (UHPLC–MS/MS). The metabolic changes of the tilapia' sera and spleen 1H NMR metabolomics showed that IG-incorporated diet (5.0%) has improved the immune response of innate immunity in serum. Five important metabolites namely ethanol, lipoprotein, lipid, a- glucose and unsaturated fatty acid (UFA), were significantly up-regulated compared to control. IG-supplementation at 2.5% had enhanced the immune response of innate immunity in spleen cell suspension. The tilapia spleen implicated by Streptococcus agalactiae infection, suggested that the survival rate of fish fed with IG supplemented diets (IAC) was 28% higher than the commercial diet (CAC). This finding was supported by the histological appearance of multiple organs. Several metabolites namely isoleucine, valine and leucine were up-regulated while betaine, α-/β-glucose, AMP and hypoxanthine were down-regulated in response to S. agalactiae infection. These findings have also proved an alternative healthy feed of IG to improve fish health in meeting the aquaculture's future target.

Keywords
Isochrysis galbana, NMR, UHPLC–MS/MS, immune-prophylaxis, biomarkers, metabolomics

Biography
Associate Professor Dr. Intan Safinar, Ismail completed her PhD and post-doctoral studies at Okayama University and Hoshi Medical University, Japan. She joined Universiti Putra Malaysia (UPM) in 2005 and became the Head of Laboratory of Natural Products at the Institute of Bioscience in November 2011 until May 2017. She is now the Head of Chemistry Department, Faculty of Science. Within the period of her affiliation to the Universiti Putra Malaysia, she has published more than 180 papers in reputed journals and presented at conferences and international meetings as speakers including keynote and invited.

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Mohammad Norazmi Ahmad[1,2]
Muhammad Shahrain Shuhaimen,[1] Nor Aini Mat Noh,[1]Nik Husna Nik Hilmi,[1]Erna Normaya Abdullah[1,2] and Mohammad Norazmi Ahmad[1,2]

[1]Experimental and Theoretical Research Lab (ETRL), Department of Chemistry, Kulliyyah of Science, IIUM Kuantan, Pahang, Malaysia
[2]Innovative Toyyib Environment Minds (ITEMS), International Islamic University Malaysia, 25200 Kuantan, Pahang, Malaysia.

Chemometric-Assisted on Extraction of Halal Meat Tenderiser from Malaysian Plants

Abstract
Meat tenderness is one of the most important attributes of meat palatability that governs the consumer acceptability and satisfaction. This characteristic generally depends upon sarcomere length, connective tissue and the extent of proteolytic degradation of the muscles. Therefore, an effective meat tenderisation method is sought after by exploring plant-derived proteolytic enzymes as meat tenderiser. One of the popular methods used by researchers around the world for meat tenderisation is treatment with proteolytic enzyme called as protease. In this study, three Malaysia's plants, namely Manihot esculenta, Spondias cytherea, and Anacardium occidentale were identified as new sources of halal meat tenderizer. Chemometric approach, namely Response Surface Methodology (RSM) was used to optimize the protease extraction from the plants. Five parameters, namely pH, CaCl2, mixing time, TX□100, and 2□mercaptoethanol were observed to give a significant effect on optimizing the protease activity. Verification test results (Tukey's test) showed that no significant difference between the expected and experimental protease activity value. The optimized protease was applied to meat and compared with a control. Based on the findings revealed from electrophoresis, texture analyser, and scanning electron microscopy results, it showsthe effectiveness of the halal protease plants act as a meat tenderizer. In conclusion, three Malaysia plants (Manihot esculenta, Spondias cytherea, and Anacardium occidentale) were discovered as a promising halal meat tenderizer's sources and acts as driver innovation on halal food industry development, especially in Malaysia.

Biography
Dr Mohammad Norazmi Ahmad was born on 12th Mac 1985 in Johor, Malaysia. He graduated with Bachelor of Science (Chemical Sciences) and Master of Science (Chemistry) from Universiti Malaysia Terengganu, and UniversitiKebangsaan Malaysia (UKM) in 2007 and 2008, respectively. Then he was awarded SLAB/SLAI scholarship to pursue his PhD in Chemistry at the UKM. Upon completed his PhD study in 2015, he was offered Assistant Prof at International Islamic University Malaysia (IIUM). Currently, his research interest isdivided into five (5) fields, which are 1) Statistic and chemometric, Density Functional Theory (DFT), Reduced Density Gradient Non-Covalent Interaction (RDG-NCI) and COnductor like Screening MOdel for Real Solvents (COSMO RS), 2) Food safety, 3) Synthesis enzyme/receptor inhibitors, 4) Polymer composite and 5) Biocatalyst. Up to now (2015-2020), he successfully secured various research and consultation grants such as from Ministry of Higher Education Malaysia (MoHE) and Green Highway Auto-City Sdn Bhd. Since 3 years lately (2018-2020), he has published 22 journals, where 15 from them are ISI-Indexed journals. He is also a reviewer for ISI-Index journals, namely Food Chemistry, Scientific Reports, Journal of Molecular Structure, Industrial Crops and Products, and Talanta. In 2020, he had been

nominated as a Young Research Award (Chemistry) and Junior Researcher Award by the Venus International Foundation and Kulliyyah of Science, International Islamic University Malaysia (IIUM), respectively. Besides active in research and development, he also excels in management level. Previously, he is Head of Department Chemistry in Kulliyyah of Science IIUM (2017-2018), Head of IIUMResearch Unit of Recreational Park (2018-2019), and committee inInternational Institute for Halal Research and Training (INHART) (2017). He is currently Head of Drug and Poison Call Centre, IIUM Poison Centre(2020-2021), Ahli LembagaPentadbir ANALIS (2017-2021), Associate member of INHART (2021), member of Royal Society of Chemistry (RSC) (2011-2021) and Institute Kimia Malaysia (IKM) (2018-2021).

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Tessa Sjahriani[1,2]
Tessa Sjahriani[1,2*], E. B. Wasito[3],and W. Tyasningsih[4]

[1]Universitas Airlangga, Dr. Moestopo road 47, Surabaya, Indonesia.
[2]Universitas Malahayati, Pramuka road 27, Bandar Lampung, Indonesia.
[3]Universitas Airlangga, Dr. Moestopo road 47, Surabaya, Indonesia.
[4]Universitas Airlangga, Mulyorejo road, Surabaya, Indonesia.

The Identification of Rz1 Gene in E. coli, E. colistrain STEC and Shigella sonneiCarriers of the Stx Gene

Abstract
The phage Rz1 gene is a membrane subunit essential for phage lysis to break the outer membrane of the bacterial host. They are major drivers of horizontal gene transfer of stx genes among E. coli serotypes and other members of the Enterobacteriaceae family because of their propensity to excise and infect different hosts. Because phage are resistant to a range of inactivation conditions, they are a strong choice for mobilizing stx gene, which might lead to the gene being transduced to a new bacterial genomic backdrop and subsequently expressed, resulting in stx production. The Rz1 gene of E. coli and Shigella sonnei carrying the stx gene was investigated in this study. Eight lytic bacteriophage isolates were taken. The amino acid of Rz1 was examined using NCBI Blast, Expasy Translation and Expasy Protparam. The coverage of the Rz1 gene sequences discovered 97.73 % to 98.90 % identical similarities with E. coli, E. coli strain STECand Shigella sonneicarrying the stx gene. The amino acid of Rz1 between E. coli, E. coli strain STEC and Shigella sonnei had a significant difference ($p < 0.001$), according to the Kruskal-Wallis statistical test. The Rz1 gene of lytic bacteriophage was discovered to have a similar identity to the sequences of E. coli and Shigella sonneicarrying the stx gene, with significant amino acid changes.

Keywords
Rz1, phage, stx,E. coli, Shigella sonnei

References
M. Nuesch-Inderbinen, M. J. A. Stevens, N. Cernela, A. Muller, M. Biggel, R. Stephan, Int. J. Med. Microbiol., Vol. 311 (8), (2021).
R. L. Lindsey, D. Batra, L. Rowe, V. N. Loparev, P. Juieng, L. Garcia-Toledo, A. Bicknese, D. Stripling, H. Martin, J. Chen, N. Strockbine, E. Trees, Genome Announcements, Vol. 5 (35), 1 – 2, (2017).

Biography
Tessa Sjahriani is an undergoing postgraduate doctoral program at Universitas Airlangga, Indonesia, with the support of scholarships from the Education Fund Management Institute (LPDP), Ministry of National Finance, Indonesia(2019-present).The research focuses on natural and environmental interactions (bacteriophages, E. coli) related to food safety. Started publishing international articles since 2021, since studying at Universitas Airlangga, with a few publications at the local/national level. Started the first online presentation in the 7th International Conference on Food Science and Food Safety on March 16, 2021 in Vienna, Austria as an oral presenter. In the same year received an award as an awardee for academic achievement. As a novice local researcher have been awarded the best novice lecturer research grants, namely Penelitian Dosen Pemula, from Research and Community Service Information System (Simlitabmas), Ministry of Research and Technology of Indonesia in year 2019.

József Popp[1] and Judit Oláh[2]

[1]Hungarian University of Agriculture and Life Sciences, Director of Institute of Economic Sciences, H-2100 Gödöllő, Páter Károly u.1., Hungary
[2]University of Debrecen, Faculty of Economics and Business, Institute of Applied Informatics and Logistics, H- 4032 Debrecen, Böszörményi u. 138., Hungary

Sustainable Agriculture: Achieving Food, Energy and Environmental Security

Abstract
The world's growing population is projected to reach 9-10 billion by 2050, with 70% of the population in urban areas, compared to 55% today. Agriculture currently accounts for 40% of the Earth's land surface and 70% of the world's use of fresh water. Agriculture and the food system also currently account for about 30% of energy consumption, and just under one-third of greenhouse gases originate from agriculture and food. Moreover, up to one-third of the world's food production is lost or wasted, according to some estimates. One third of global population is considered overweight, of whom 30% are obese(with a body mass index greater than 30). Hunger and under nutrition, micronutrient deficiencies, and over nutrition with obesity exist in parallel and are partly connected. Worldwide, 0.8 billion people are chronically undernourished in terms of calorie deficit, and 2 billion people are undernourished due to micronutrient deficit.

The transport sector uses one third of total final energy demand and is responsible for 23% of global energy-related CO2 emissions. About 96% of global transport energy needs are met by oil and petroleum products.Renewable energy accounts for an estimated 18% of total final energy consumption. Traditional use of biomass for cooking and heating accounts for 7%, and modern renewables for 11% of total final energy demand. Biofuels for transport represents 6% of the renewable energy. The proportion of global cropland used for biofuels is currently some 2%.The challenge is to support advanced biofuel development, which is ecologically sustainable and commercially feasible. The EU and US have introduced caps on food-based biofuels.

Climate change will have negative impacts on food systems, necessitating the introduction of climate-smart agriculture; but agriculture itself also contributes substantially to climate change. Environmental sustainability includes climate resilience throughout food systems and transforming food systems to mitigate their global warming impact. Land and water use should provide a range of the private and public goods required in a sustainable way. Sustainable intensification enhances the efficiency of inputs and land use. Food and nutrition security must include both supply-side and demand-side issues: reducing food waste and changing to healthier consumption patterns will reduce pressure on land and other resources.

Keywords
Food, bioenergy, environment, sustainability

Biography
József Popp is a Professor at the Hungarian University of Agriculture and Life Sciences. He is Professor at WSB University, Dąbrowa Górnicza, Poland and North-West University, South Africa. He is also an active member and chairman of several academic and professional organisations. Professor József Popp obtained his PhD of economics at the Hungarian Academy of Sciences and his Dr. Sc. oec. Degree at the Humbold University, Berlin, Germany. He is a corresponding

member of the Hungarian Academy of Sciences, where he is the chairman of the the BolyaiJános Research Scholarship Committee, the chairman of the Committee on Agricultural Economics and the vice-chairman of the Committee of Circular Economy. He also serves as a member on a number of Editorial Boards of international journals world wide. He has participated in several international research projects and is a member of several national councils related to science and education. Among the honors he has received are: Doctorem Honoris Causa Pannon University, Hungary,2010 and "Honoris Causa Professorship", Delhi School of Professional Studies and Research, India, 2010,Award of the Hungarian Academy of Sciences in Recognition of Research Contributions, 2011. He has a long list of publications and has advised dozens of PhD students and post doctors holding research and teaching positions in Hungary and abroad. Stanford University has recently released a list that represents the top 2 per cent of the most-cited scientists of the world in various disciplines including the name of József Popp as well.

Judit Oláh, PhD, associate professor at the Faculty of Economics and Business University of Debrecen. She is full time assistant professor at WSB University. Field: social sciences, discipline: management and quality sciences and full extra-ordinary assistant professor at the North-West University, TRADE Research Entity South Africa. He is editorial member of international journals: Amfiteatru Economic, Polish Journal of Management Studies, Economics and Sociology, Forum Scientiae Oeconomia, PragmatatesOikonomias, Central European Journal of Labour Law and Personnel Management, Global Journal of Entrepreneurship and Management. She was guest editor of Sustainability, Special Issue - Sustainability in Food Consumption and Food Security; Energies, Special Issue - Management and Technology for Energy Efficiency Development; Administrative Sciences, Special Issue - Business Strategy of the Value Chain; Sustainability, Specail Issue - Sustainable Resource Utilizaion in Global Economics Background: Outlook and Challenges. She is a member of the International Research Institute for Economics and Management (IRIEM), Institute of Data Science and Artificial Intelligence (IDSAI), International Engineering and Technology Institute (IETI), Researcher's Excellence Network (RENET). Her main research interests are food industry, digitalisation in the supply chain, logistics, bioenergy, Industrie 4.0 and risk management. She published 48 papers at MDPI (Sustainability, Energies, Foods, Agronomy, Economies, Mathematics, Nutrients, Social Sciences).

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Dr. Wendy Sue Swanson MD, MBE, FAAP[1*]

[1]Chief Medical Officer for SpoonfulONE, Director of Digital Health and Professor with Sean Parker Center For Allergy & Asthma Research at Stanford University, California, USA.

Prevention is Possible: The Science of Early Allergen Exposure in Infants

Abstract
Food allergies are a chronic, life-threatening, and accelerating global epidemic with a complex pathophysiology. Since 2015, emerging data has dramatically shifted guidance on early allergen introduction for the primary prevention of food allergy. In this session, Dr. Wendy Sue Swanson—Pediatrician, Director of Digital Health at Sean Parker Center For Allergy and Asthma Research, Adjunct Professor at Stanford University, and Chief Medical Officer for SpoonfulONE—will provide an overview of evolving perspectives shaping allergen introduction guidance around the world and review the groundbreaking research by Dr. Kari Nadeau, MD, PhD. This research demonstrated that daily feeding of a multi protein blend for a year showed a shift towards a less allergy-prone profile and laid the foundation for the development of SpoonfulONE—the first commercially-available baby food product to introduce 16 foods associated with over 90% of food allergies in a safe and convenient format.

Keywords
Pediatric Nutrition, Food Allergy Prevention, Early Allergen Introduction, Diet Diversity, Food Innovation, Immunology

References
A. Z. Quake, T. A. Liu, R. D'Souza, K. G. Jackson, M. Woch, A. Tetteh, V. Sampath, K. C. Nadeau, S. Sindher, R. S. Chinthrajah, S. Cao , Nutrients, 14 (4), 737 - 759 (2022).
D. M. Fleischer, E. S. Chan, C. Venter, J. M. Spergel, E. M. Abrams, D. Stukus, M. Groetch, M. Shaker, M. Greenhawt, 9 (1), 22–43 (2021).

Biography
Wendy Sue Swanson, MD, MBE, FAAP is a pediatrician and the Chief Medical Officer at SpoonfulONE. As CMO, Dr. Swanson leads efforts to foster conversations around the importance of early and consistent inclusion of potential allergens in the diet. She is a pediatrician, author, and prominent advocate of evidence-based medicine and prevention. She speaks internationally on prevention, digital health, and health innovation. She has been a leading voice in health care, working to revolutionize health communications by using social and digital media, as well as mass media, to bridge the gap between parents and doctors. For 10 years Dr. Swanson wrote the Seattle Mama Doc blog for Seattle Children's Hospital and founded the Digital Health department in 2013. Swanson was Chief of Digital Innovation for 6 years leading a team in innovation by testing and creating new digital tools.

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Y. Kuzyakov[1,2*]
Y. Kuzyakov[1,2*] and X Xu[3]

[1]University of Göttingen, Göttingen, Germany.
[2]Peoples Friendship University of Russia (RUDN University), 117198 Moscow, Russia.
[3]Institute of Geographic Sciences and Natural Resources Research (CAS), Beijing, China.

Competition between Roots and Microorganisms for Nitrogen in Soil: Mechanisms and Ecological Relevance

Abstract
Demand of all living organisms on the same nutrients forms the basis for inter specific competition between plants and microorganisms in soils. This competition is especially strong in the rhizosphere. To evaluate competitive and mutualistic interactions between plants and microorganisms and to analyse ecological consequences of these interactions, we analysed 424 data pairs from 41 15N-labelling studies that investigated 15N redistribution between roots and microorganisms. Calculated Michaelis–Menten kinetics based on Km (Michaelis constant) and Vmax (maximum uptake capacity) values from 77 studies on the uptake of nitrate, ammonia, and amino acids by roots and microorganisms clearly showed that, shortly after nitrogen (N) mobilization from soil organic matter and litter, microorganisms take up most N. Lower Km values of microorganisms suggest that they are especially efficient at low N concentrations, but can also acquire more N at higher N concentrations (Vmax) compared with roots. Because of the unidirectional flow of nutrients from soil to roots, plants are the winners for N acquisition in the long run. Therefore, despite strong competition between roots and microorganisms for N, a temporal niche differentiation reflecting their generation times leads to mutualistic relationships in the rhizosphere. This temporal niche differentiation is highly relevant ecologically because it: protects ecosystems from N losses by leaching during periods of slow or no root uptake; continuously provides roots with available N according to plant demand; and contributes to the evolutionary development of mutualistic interactions between roots and microorganisms.

Keywords
Carbon and nitrogen turnover, Mutualism and nichedifferentiation, Nutrient acquisition, Plant–microbe interactions, Priming effect, Rhizosphere ecology.

References
1. Y. Kuzyakov, X. Xu Competition between roots and microorganisms for N: mechanisms and ecological relevance. New Phytologist 198, 656-669. (2013) https://doi.org/10.1111/nph.12235

Biography
Prof. Yakov Kuzyakov University of Hohenheim 1990 PhD, Dr.rer.nat. Moscow Agricultural Academy, Russia 1986 Dipl.Agr.Ing., Martin-Luther-University, Halle/Soil, Germany Awards 2019 Visiting Professor, Chengdu Uni of Technology 2018 Changjiang (Yangtze River) Scholar Award 2017 Visiting Professor, IESDA Beijing Chinese Academy of Agricultural Sciences 2017 Tianjin's 1000-Talents Short-Term Experts 2016 EGU Outstanding Editor Award 2015 John Waid Award for

the best Review paper in Soil Biology & Biochemistry 2015 High-end Foreign Experts Program ISA Changsha CAS, China 2015 Chair Professor, Huazhong Agricultural University, Wuhan Hubei, China 2013 Visiting Professor, ISA Changsha Chinese Academy of Sciences 2011 Sir Allan Sewell Visiting Fellowship, Griffith University, Brisbane, Australia 2010 Visiting Professor, IGSNRR Beijing Chinese Academy of Sciences 2002-2005 Heisenberg Fellowship, DFG 1999-2002 Habilitation Fellowship, DFG

Monique EPSTEIN
E-Seniors, Director, Paris, France

Food4Seniors
Co-create With all Customer Groups
Listen what the customers have to say about your innovation idea
The User Centered Design must be at the core of the development of innovative and sustainable food products

Abstract
Food nutrition and seniors/elderly people….

When it comes to seniors, we should pay more attention to the wording…in order not to offense them
But mainly we should be conscious that FOOD for Elderly or seniors is a specific subject by itself
But not in the sense where pharmaceutical or food industrials would like to hear it
We, seniors, don't need so much artificial food!
We mainly need good and disinterested advices which do not cost anything
Like making a choice about the aliments to eat after a certain age or corresponding to certain diseases and/or normal effects of ageing = deficiencies due to age
Seniors - if they can afford it, but in Europe that should not be areal problem - are looking for authentic products, with the taste "as it used to be in old times", they might look for specific brands , they have enough time to cook and therefore, to buy fresh fruits and vegetables etc..
What they mainly need is to have good advices, to be informed, under others of the need of additional vitamins like D C B12 magnesium….etc
But they not specifically need to eat artificial food for that !
But first of all, instead of imposing new kind of foods to seniors, we should ask them what they think and want, because they pretty much know best what fits them!
Bottom up and not top-down
This is the first step to study nutrition for seniors.
THEN you might try to help them changing their food habits by explaining the scientific reasons behind it !
And there, there is indeed some "business" to do in terms of creating smartphone apps …or computer information , gaming, recipes adaptation platforms..
But don't forget …keep it FUN…to address seniors… you must gamify !!

Keywords
seniors elderly food nutrition cocreation apps

References
EIT Health FoodFE project 2021

Biography

Monique EPSTEIN– director and founder of the association As computer consultant with an MA in computer science, Monique Epstein has a strong expertise in application design, consulting services and project management. Starting her career as a Math teacher, going over to computers analyst/programmer, moving on to designing and implementing computerized information systems, Monique re-oriented her career in 1994 towards multimedia application design, working as project manager. Her intellectual curiosity has constantly driven her to take an interest in the novelties of digital technologies as well as to advocate for their use in fields as diverse as training, health, active retirement, well-being, nutrition, communication, smart cities and more recently, sustainable development. Since 2004, she has created several non-profit organizations whose common aims are helping e-excluded /disadvantaged people from all ages to get familiar with digital technologies, bridging the gap between generations , fostering seniors' social participation,providing ICT courses for seniors, raising awareness about the importance of ICT solutions in everyday life and being involved in the development of new products and services aiming to boost independent living and maintain physical and mental health Monique is also administrator of EURAG-Europe association and involved in the subject of accessibility in the frame of ICANN's dedicated "At-large Structure".

Yehuda Shoenfeld, MD. FRCP, MaACR

Zabludowitcs Center for Autoimmune Diseases ,Sheba Medical Center.

Incumbent of the Laura Schwartz Kipp chair for Autoimmune diseases. Tel Aviv University, Israel.

The Mosaic of Autoimmunity; The Role of Genetics and Environmental Factors and Especially Diet

Abstract

Autoimmune diseases are conditions in which the immune system damages normal components of the individual. Thus autoantibodies productions were found to be multifactorial in their etiology. For practical reasons these factors are classified into four categories:

Genetic, which entail the MHC class I, II, and III. A case in point will be the haplotypes of HLA-DRB1 which are prevalent in many classical diseases.
Immune deficiencies: C1q C2, C4 and IgA deficiencies are among the most common defects associated with diverse autoimmune conditions.

Hormonal state, most autoimmune diseases are detected in females at the child bearing ages. The role of estrogens will be delineated. In addition other hormones play a role i.e. prolactin.

Emergence environmental causes: Those are the most important as a trigger factors (i.e. adjuvants) determining the time and type of disease. They entail infectious agents, chemicals, drugs and even vaccines.

The type of disease in an individual, in an autoimmune prone family, will be determined by the specific combination of the different factors mentioned above.

A special emphasis will be put on smoking, on unsaturated fats, saltydiet, chocolate, coffee, spicy food, cannabinoids, and the interaction with component of parasites.

References

1) Shoenfled Y, et al. The mosaic of autoimmunity. IAMJ 2008;10; pp.3-7;8-12;13-19.2) Yaxiong Deng, Xin Huang, HaijingWu, Ming Zhao, Qianjin Lu, Eitan Israeli, Shani Dahan, Miri Blank, Yehuda Shoenfel. Some like it hot: The emerging role of spicy food (capsaicin) in 3 autoimmune diseases. Autoimmunity Reviews 2016; 15(5): 451-456.3) Carlo Perricone, MathildeVersini, Dana Ben-Ami, SmadarGertel, AbdullaWatad, Michael J. Segel, FulviaCeccarelli, Fabrizio Conti, Luca Cantarini, Dimitrios P. Bogdanosi, Alessandro Antonelli, Howard Amital, Guido Valesini, Yehuda Shoenfeld. Smoke and autoimmunity: The fire behind the disease. Autoimmunity Reviews 2016; 15: 354–374.
4) Katchan V, David P, Shoenfeld Y. Cannabinoids and autoimmune diseases: A systematic review. Autoimmunity Reviews 2016; 15: 513–528.

Biography

Dr. Yehuda Shoenfeld is the founder and head of the Zabludowicz Center for Autoimmune

Diseases, at the Sheba Medical Center which is affiliated to the Sackler Faculty of Medicine in Tel-Aviv University, in Israel. Dr. Shoenfeld is the Incumbent of the Laura Schwarz-Kipp Chair for Research of Autoimmune Diseases at the Tel-Aviv University. His clinical and scientific works focus on autoimmune and rheumatic diseases, and he has published more than 1700 papers in journals such as New Eng J Med, Nature, Lancet, Proc Nat Acad Scie, J Clin Invest, J Immunol, Blood, FASEB, J Exp Med, Circulation, Cancer and others. His articles have had over 31,000 citations. He has written more than three hundred and fifty chapters in books, and has authored and edited 25 books, some of which became cornerstones in science and clinical practice, such as “The Mosaic of Autoimmunity”, “Infections and Autoimmunity” and the textbook “Autoantibodies” and “Diagnostic criteria of autoimmune diseases”, all of which were published by Elsevier and sold by the thousands. He is on the editorial board of 43 journals in the field of rheumatology and autoimmunity and is the founder and the editor of the IMAJ (Israel Medical Association Journal) the representative journal of science and medicine in the English language in Israel, and also is the founder and Editor of the “Autoimmunity Reviews” (Elsevier) (Impact factor 6.6) and Co-Editor of “Journal of Autoimmunity” (Impact factor 7.4). For the last twenty years Dr. Shoenfeld has been the Editor of “Harefuah” – The Israel journal in medicine (Hebrew) and he has edited the Israel Medical Encyclopedia (10 volumes, 5000 items). He had organized over 20 international congresses in autoimmunity. Dr. Shoenfeld received the EULAR prize in 2005, in Vienna, Austria: “The infectious etiology of anti-phospholipid syndrome”. He has received a gold medal from the Slovak Society of Physicians for his contribution to Israel – Slovakia collaboration (March 2006), and is honorary member of the Hungarian Association of Rheumatology. In UC Davis, USA, Dr. Shoenfeld received the Nelson’s Prize for Humanity and Science for 2008. In 2009 he was honored as Doctoris Honoris Causa, from Debrecen University (Hungary), and from 2009 he is honorary member of the Slovenian National Academy of Sciences. He has recently been awarded a Life Contribution Prize in Internal Medicine in Israel, 2012. Dr. Shoenfeld has educated a long list of students (>25) being heads of departments and institutes.

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Isabel M.P.L.V.O. Ferreira[1*]

Isabel M.P.L.V.O. Ferreira[1*], Susana Pinho[1,2], Zita E. Martins[1], Miguel Faria[1]

[1]LAQV/REQUIMTE, Department of Chemical Sciences, Laboratory of Food Science and Hydrology, Faculty of Pharmacy, University of Porto, Rua de Jorge Viterbo Ferreira no. 228, 4050-313 Porto, Portugal
[2]LAQV/REQUIMTE, ICBAS, School of Medicine and Biomedical Sciences, University of Porto, Rua de Jorge Viterbo Ferreira no. 228, 4050-313 Porto, Portugal

In Vitro Models to Study the Connection between Food Chemistry and Disease Prevention

Abstract

Food chemistry comprehends different scientific areas, such as the nutritional composition of foods, the identification and quantification of chemical contaminants, additives, and bioactive compounds. It is also linked with nutrition, interactions between nutrients and human genome, health prevention and disease genesis. In vitro models can be useful to simplify complex in vivoprocesses andtake advantage of controlled and reproducible conditions to better understand the connection between food chemistry and health promotion/disease prevention. Cell-lines from human origin were applied in the context of a whole food/meal approach to studymolecular changes caused by cellular metabolism of nutrients on messenger ribonucleic acid (mRNA) expression of gastric and intestinal epitheliums. Digestion simulation was performed using a standardized semi-dynamic in vitromodel. Cell-culture models of gastric (NCI-N87) and intestinal epithelium(co-culture of Caco-2 and mucus producing HT29)mimic the human gastrointestinal barrier. The changes on mRNA expression of endogenous antioxidant enzymes, and cytokines caused by exposition to in vitro digested samples provided a better understanding of the causal relationships between foods/meals and disease prevention.

Funding

This research is supported by FCT in the framework of the project PTDC/SAU-NUT/30322/2017 – DIETimpact and by UIDB/50006/2020.

Keywords

Semi-dynamic digestion model;NCI-N87; Caco-2/HT29 co-culture; mRNA expression, endogenous antioxidant enzymes; cytokines.

Biography

Isabel Maria Pinto Leite Viegas Oliveira Ferreira, Associate Professor at University of Porto - Faculty of Pharmacy and coordinator of Food Science & Nutrition thematic line at LAQV/REQUIMTE. Completed Habilitation in Chemical Sciences in 2005 by University of Porto - Faculty of Pharmacy, PhD in Pharmacy, specialty of Pharmaceutical Chemistry in 1994 by University of Porto - Faculty of Pharmacy and the degree in Pharmaceutical Sciences in 1990 at University of Porto - Faculty of Pharmacy. Published 194 articles in journals and 9 book chapters. Coordinated/participated in 30 research projects, including international (FP7, H2020), national funded research projects (FCT and QREN), and other competitive projects funded by UPorto or private companies. Supervised/co-supervised 11 PhD/ 30MsD thesis, 10 PosDoc fellows and received several awards and/or honors. Her research work has been focused on food science from different perspectives, in order to deepen

the knowledge on food composition and predict foods' possible health impacts. Major areas of research during the last years include, the improvement of food quality, fight food adulteration, control additives and chemical contaminants, test the impact of food beneficial and harmful compounds in the context of a whole diet pattern, applying in vitro models using cells of human origin and promote sustainable foods with enhanced health and sensorial properties. The main fields of expertise include (i) food composition and safety through advanced multi-parametric chromatographic methods for evaluation of nutrients, contaminants, bioactive and aroma compounds; (ii) DNA-based methods for species identification and adulterants detection in plant and animal matrices; (iii) Sensorial parameters related with food colour and taste; (iv) molecular, cellular and functional mechanisms that underlie protective/harmful effects of food compounds on oxidative damage, inflammation, mitochondrial damage, etc.; (v) role of nutrition in the prevention of chronic diseases; (vi) Recycling bioactive compounds from industrial wastes and by-products for novel technological applications in food industry; (vii) data analysis and data interpretation to find useful patterns, connections, and relationships within data using mathematical modelling and statistics.

Onno van Schayck CP[1]

Prof. Onno van Schayck CP[1], WilleboordseM#[1], Bartelink NHM[2], Assema P[2], Kremers SPJ[3], Savelberg HHCM[4], Hahnraths MTH[1], Vonk L[5,6], Oosterhoff M[7*], Winkens B[8], Jansen MWJ[5,6]

[1]Department of Family Medicine, Care and Public Health Research Institute (CAPHRI), MaastrichtUniversity, P.O. Box 616, 6200 MD, Maastricht, The Netherlands.

[2]Department of Health Promotion, Care and Public Health Research Institute (CAPHRI), School of 21 Nutrition and Translational Research in Metabolism (NUTRIM), Maastricht University, P.O. Box 616, 22 6200 MD, Maastricht, The Netherlands.

[3]Department of Health Promotion, School of Nutrition and Translational Research in Metabolism 24 (NUTRIM), Maastricht University, P.O. Box 616, 6200 MD, Maastricht, The Netherlands.

[4]Department of Nutrition and Movement Sciences, School of Nutrition and Translational Research in 26 Metabolism (NUTRIM) and School of Health Professions Education (SHE), Maastricht University, 27 P.O. Box 616, 6200 MD, Maastricht, The Netherlands.

[5]Department of Health Services Research, Care and Public Health Research Institute (CAPHRI), 29 Maastricht University, P.O. Box 616, 6200 MD, Maastricht, The Netherlands.

[6]Academic Collaborative Centre for Public Health Limburg, P.O. Box 33, 6400 AA, Heerlen, The 31 Netherlands.

[7]Department of Clinical Epidemiology and Medical Technology Assessment, Care and Public Health 33 Research Institute (CAPHRI), Maastricht University Medical Centre, P.O. Box 5800, 6202 AZ, 34 Maastricht, The Netherlands.

[8]Department of Methodology and Statistics, Care and Public Health Research Institute (CAPHRI), 36 Maastricht University, P.O. Box 616, 6200 MD, Maastricht, The Netherlands.
* Current address: Centre for Nutrition, Prevention and Health Services, National Institute for Public Health and 38 the Environment (RIVM), P.O. Box 1, 3720 BA, Bilthoven, The Netherlands.

Battling the Obesity Epidemic with a School-Based Intervention: Long-Term Effects of a Quasi-Experimental Study

Abstract
Purpose: Healthy dietary habits learned at a young age often track into adulthood, with a potential to induce life-long effects on overweight and related chronic conditions. School-based health-promoting interventions are increasingly seen as an effective strategy to improve health and prevent obesity, but the evidence on long-term effectiveness is scarce. The effects of long-term exposure to the Healthy Primary School of the Future (HPSF) on children's dietaryand weight-related outcomesare

presented andimplications for future school policies will be discussed.
Methods: The study has a quasi-experimental design with four intervention schools, i.e., two full HPSFs (focus: diet and physical activity), two partial HPSFs (focus: physical activity), and four control schools. Primary school children (aged 4-12 years) attending the eight participating schools were invited to enroll in the study between 2015 and 2019. Children's body mass index z-score (BMIz), waist circumference (WC) and dietary behaviors (child- and parent-reported questionnaires) were measured annually.
Results: Between 2015 and 2019, 2236 children enrolled. The average exposure to the school condition was 2·66 (SD 1·33) years, and 900 participants were exposed for the full four years (40·3%). After four years of intervention, both full (estimated intervention effect (B)=-0·17 (95%CI -0·27 to - 0·08) p=0·000) and partial HPSF (B=-0·16 (95%CI-0·25 to -0·06) p=0·001) resulted in significant changes in children's BMIz compared to control schools. Likewise, WC changed in favor of both full and partial HPSFs. In full HPSFs, almost all dietary behaviors changed significantly in the short term. In the long term, only consumption of water and dairy remained significant compared to control schools.
Conclusions: The HPSF iseffective in bringing unfavorable changes in children's body composition to a halt in both the short and long term. ThisoffersDutch policy makers robust evidence to sustainably implementthe program in school-based routine.Providing healthy school lunches is feasible as long as parents, children and schools are fully involved in theimplementation.Ideally, complementing this with a continuum of dietary approachestargetingmultiple aspects of children's social, cultural, economic and physical environment throughout childhood, adolescence and towardsadulthood,will optimize the impact on population health.

Biography

Prof.dr. C.P. van Schayck is professor of Preventive Medicine of Maastricht University. He is Scientific Director of the Research School CaRe consisting of four research institutes, i.e. CAPHRI of Maastricht University, RIHS of the Radboud University Medical Centre, APH of the VUmc, AMC, VU and UvA in Amsterdam and NIVEL in Utrecht. He is visiting professor of the University of Edinburgh. He supervised more than 60 PhD students as promotor. He has published more than 500 papers in International Journals, such as the Lancet, New England Journal of Medicine and JAMA and has been acknowledged as the most cited researcher in the world in his specific research area. He is member of The Health Council of the Netherlands, member of the Scientific Advisory Board of ZonMW VIDI and member of the Lancet Global Commission on Pollution, Health and Development.

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O. Pinho*[1,2]

O. Pinho*[1,2], S. Casal[2], M. Ribeiro[2] M. Silva[3], O. Viegas[1,2], I. M.P.L.V.O. Ferreira[2]

[1]Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto, 4150-180 Porto, Portugal;
[2]LAQV/REQUIMTE, Laboratório de Bromatologia e Hidrologia, Departamento de Ciências Químicas, Faculdade de Farmácia da Universidade do, 4050-313 Porto, Portugal;

Fat Composition of Meals and their Impact on Atherogenicity and Thrombogenicity

Abstract

Cardiovascular disease (CVD) is a main cause of death worldwide. The dietary fat composition is pointed as one of the main risk factors. Atherogenic index (AI) and thrombogenic index (TI) are widely used to estimate the probability of increasing the incidence of atheroma and/or thrombus formation, based on the following equations:

AI=[C12:0+4xC14:0+C16:0][∑MUFA+ ∑ω6 PUFA+ ∑ω3PUFA]
TI=[C14:0+C16:0+C18:0][0.5x∑MUFA+ 0.5x∑ω6 PUFA+ 3x∑ω3PUFA + ω3/ω6]

Several studies have associated the consumption of single foods or nutrients with a lower incidence of CVD. However, since foods are not consumed individually, whole meals approaches are important to understand the impact of food combination on CVD promotion/prevention. The aim of this study was assessing the impact of single food replacement in a whole meal on fatty acids profile and the related health lipid indices, AI and TI.

Six meals were prepared aiming to make real life replacements in the perspective of the consumer. A meal containing fatty beef, French fries and a sugary soft drink was prepared, and one replacement at a time was done; i) the fatty beef was replaced by lean beef and olive oil; ii) half the amount of French fries were replaced by broccoli and iii) a freshly made strawberry juice replaced the sugary soft drink; iv) to achieve pescatarian meal, the fatty beef was replaced by mackerel, whereas v) to achieve a vegetarian meal, beef was replaced by chickpeas. The nutritional composition of meals was assessed by official AOAC methods. The fatty acids composition was assessed by GC-FID. A Principal Component Analysis (PCA) using fatty acids profile as variables. AT and TI were estimated. Fatty acid profile and dietary indexes are useful tools, but they should not be interpreted alone, since the impact of whole meals on health depends on several other factors not considered here (e.g. fibre, bioactives).This work was financed by FEDER - Fundo Europeu de Desenvolvimento Regional funds through the COMPETE 2020 - Operational Programme for Competitiveness and Internationalisation (POCI), and by Portuguese funds through FCT, Fundação para a Ciência e a Tecnologia, in the framework of the project PTDC/SAU-NUT/30322/2017 –DIETimpact.

Keywords

Cardiovascular disease,Atherogenic index, thrombogenic index, Fatty acid

Biography

Olivia Maria de Castro Pinho is researcher from LAQV/REQUIMTE and Full Professor at the Faculty of Nutrition and Food Science from the University of Porto. Expertise: Food Safety. Development and optimisation of chemical and biochemical methodologies to be applied to nutrients. Improvement of food manufacturing processes and cooking to promote consumer's health. As nutritionist she has also experience in studies related with food consumption habits. As nutritionist she has also experience in studies related with food consumption habits.

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Isabel Mafra

Isabel Mafra* and Joana Costa
REQUIMTE-LAQV/Faculty of Pharmacy, University of Porto, Porto, Portugal.

Challenges in Detecting Allergenic Foods by DNA-Based Methods

Abstract
Food-induced allergies represent an increasing public health problem in western countries, being the eviction of the offending food the only effective treatment for allergic patients. However, accidental exposure to food allergens is likely to occur because of their almost ubiquitous presence in processed foods. About 90% of food allergies are attributed to 8 groups of foods (tree nuts, peanuts, soybean, cereals containing gluten, eggs, milk, crustaceans and fish). The protection of allergic individuals relies on the effective labelling compliance that depends on the availability of analytical tools. Accordingly, analytical methodologies for the detection of food allergens play an essential role, being the subject of extensive research advances. They rely on protein- and DNA-based methods. Although considered as indirect approaches, DNA analysis provide highly reliable, specific and sensitive tools, with proven applicability to several food matrices/allergenic foods/processing [1-3]. This presentation will provide an overview on the main techniques used for allergen analysis, with the main focus on DNA-based methods.

Keywords
Food allergens, detection methods, DNA analysis, real-time PCR, food processing.

Acknowledgements
This work was funded by national funds (FCT, Fundação para a Ciência e Tecnologia) through the projects AlleRiskAssess and Hypoallergen (PTDC/BAA-AGR/31720/2017 and PTDC/BAA-AGR/4005/2021, respectively) and the strategic funding (UID/QUI/50006/2020).It was also funded by European Union (COMPETE POCI-01-0145-FEDER-031720 and NORTE-01-0145-FEDER-000052). J. Costa thanks FCT for funding through program DL 57/2016 – Norma Transitória (SFRH/BPD/102404/2014).

References
C. Villa, et al. Food Chem., 262, 251–259 (2018).
T.J.R. Fernandes, et al. J. Food Comp. Anal.,72, 7-14 (2018).
C. Villa, et al. Food Control, 108, 106823 (2020).

Biography
Isabel Mafra graduated in Food Engineering from the Portuguese Catholic University in Porto, completed a Master degree in Biological Engineering from the University of Minho and a PhD degree in Chemistry from the University of Aveiro. She is a Senior Researcher at LAQV/REQUIMTE, Faculty of Pharmacy, University of Porto. Her research is focused on molecular biology applied to food authentication, food allergen analysis/characterisation and GMO detection, with strong expertise in the development of DNA-based methods, including DNA extraction from complex food matrices,

PCR, real-time PCR, HRM analysis, sequencing,

among others. She has also expertise in food chemistry and food technology/biotechnology. She has participated in several national and international research projects and published over 100 papers in index journals (H-index of 31).

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Joana Costa

Joana Costa*and Isabel Mafra

REQUIMTE-LAQV/Faculty of Pharmacy, University of Porto, Porto, Portugal.

Protein Allergenicity as affected by Food Processing and Matrix

Abstract
Considered as a biomedical risk, food allergy continues to be a major issue of Food Safety and a societal challenge, whose increasing prevalence at a global scale might be related to the rising consumption of highly processed foods. Classical processing technologies, such as heat treatments, enzymatic/acid hydrolysis, fermentation, physical treatments, or combined processes, are known to shape the allergenicity of foods [1,2]. Yet, their effects on the structural/allergenic properties of foods are hard to predict, due to the multiplicity of the allergens within a specific food and how distinct proteins can be differently influenced by the same treatment.In this presentation, a holistic overview ofthe effects of food matrix and processing technologies on protein allergenicity will be provided, with a special focus on the novel (e.g. ohmic treatment, high-pressure processing)and hurdle (sequential application of 2 or more processing methods) technologies.To date, food processing methods (e.g. boiling, roasting, autoclave)inducing changes in protein integrity (structure) can contribute to multiple or contradictory effects (increase/maintain/reduce) on protein allergenicity, impacts that are highly dependenton the nature of the allergens. Food processing methods involving protein fragmentation (e.g. fermentation, enzymatic hydrolysis) normally contribute toreducing or even mitigating protein allergenicity.

Keywords
Food allergy, IgE-binding capacity, food allergens, food processing, matrix effect.

Acknowledgments
This work was funded by national funds (FCT, Fundação para a Ciência e Tecnologia) through the projects AlleRiskAssess and Hypoallergen(PTDC/BAA-AGR/31720/2017 and PTDC/BAA-AGR/4005/2021, respectively) and the strategic funding (UID/QUI/50006/2020).It was also funded by European Union (COMPETE POCI-01-0145-FEDER-031720 and NORTE-01-0145-FEDER-000052). J. Costa thanks FCT for funding through program DL 57/2016 – Norma Transitória (SFRH/BPD/102404/2014).

References
J. Costa, et al. Clin. Rev. Allergy Immunol.,62, 1-36 (2022).
J. Costa, et al. Clin. Rev. Allergy Immunol.,62, 37-63 (2022).

Biography
Dr Joana Costa has a PhD in Pharmaceutical Sciences from Faculty of Pharmacy University of Porto. She is anAssistant Researcher at REQUIMTE-LAQV/Faculty of Pharmacy University of Porto with a special focus on FOOD ALLERGY studies, participating in several international/national projects on FOOD ALLERGENS, FOOD AUTHENTICATION, PLANT FOOD SUPPLEMENTS and

GMO analysis. She is author/co-author in more than 70 publications in international peer-reviewed journals (H-index 20), 6 book chapters, 50 oral/87 poster presentations, organizing committee (7 events), 11 awards. Participation in n=15 national/international projects and MC member of COST Actions (CA18127, CA18227, FA1402).

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L. Pogačnik[2]

R. FM Silva[1], N. P. Ulrih[2], D. Brites[1]and L. Pogačnik[2*]

[1]Research Institute for Medicines (iMed.ULisboa) and Department of Biochemistry and Human Biology (DBBH), Faculty of Pharmacy, Universidade de Lisboa, 1649-003 Lisbon, Portugal

[2]Department of Food Science and Technology, Biotechnical Faculty, University of Ljubljana, SI-1000 Ljubljana, Slovenia

Potential Health Benefits of a Vegetal Invader

Abstract

The knotweed species Fallopiajaponica(FJ), Fallopia. Sachalinensis(FS) and their hybrid Fallopia x bohemica(FB) are some of the most invasive plants in the world. They pose a great environmental threat since they lead to the loss of native biodiversity. The elimination of these invasive plants from native ecosystems is a great economic burden, as so it is of great interest to search for practical uses of those plants to achieve some cost-effective use. Despite their negative impact, those plants are rich sources of bioactive stilbenes (e.g. resveratrol and polydatin), emodin, and catechins (e.g. catechin, and epicatechin) with proved biological activities[1]. Moreover, roots of these plans have been used in traditional Chinese medicine as anti-inflammatory agents for centuries. In fact, many of those phytochemicals have been recognized as potent antioxidants, sharing also other important actions like their anti-inflammatory properties and their proposed capability to modulate several cell-signaling pathways and mediators. Due to their numerous proposed actions, polyphenols have been studied in many different pathologies like cancer, cardiovascular and neurodegenerative disorders, resulting in a growing number of clinical trials on the acute or chronic use of dietary polyphenols. Their relevance is particularly important in the case of neurodegenerative diseases, or cancer, where an effective treatment is still not available[2].The aim of our research was therefore to evaluate different biological activities of roots from all three invasive knotweed species in order to access their potential usage in human health. For that we used ethanol extracts of the three plant species and evaluated their antioxidant activity, antidiabetic properties (inhibition of alpha-amylase) and neuroprotection activities (apoptotic and necrotic-like cell death). Our first results show that all extracts have a high antioxidant activity, with the maximum for FS and the minimum for FJ. Regarding antidiabetic properties, all extracts show a concentration-dependent ability to inhibit alpha-amylase activity, with the maximum being achieved for FS, with more than 80% inhibition already for the lowest concentration tested (0.01 mg/mL, considered as dry extract). As for neuroprotection properties, it was interesting to see that, at the lowest concentration, all extracts were able to significantly reduce both the apoptotic and necrotic-like cell death, induced in cultured neurons by an oxidative stimulus, with no toxicity observed for the extracts alone. To conclude, our results point a direction to the possible valuable use of a vegetal invader species as a source of bioactive molecules that can be effective in preventing or treating several human pathological conditions and, apparently, with minimal to no toxicity, suggesting a safe usage.

Keywords

knotweed species, waste products, antioxidants, antidiabetic activity, neuro protection

References

[1] L. Pogačnik, T. Bergant, M. Skrt, N.P. Ulrih, J. Viktorová, T. Ruml, Foods, 9,p 12, (2020).
[2] R.F.M. Silva, L. Pogacnik, Antioxidants,9(1), 2020.

Biography

Dr. Lea Pogačnik, a professor of Chemistry, Food Analytical Chemistry and Biochemistry at University of Ljubljana, Biotechnical Faculty (2000-present), Slovenia, is an expert on preparation of extracts from different natural sources as well as their chemical and biological characterization. She has mentored over 60 graduate students and published more than 30 research articles. Her research focuses on the preparation and evaluation of bioactivities in extracts of different tissues of alien knotweed species, namely Japanese knotweed (Fallopia japonica), Giant knotweed (F. sachalinensis) and their interspecific hybrid – Bohemian knotweed (F. x bohemica), preparation and characterisation of cianobacteria species Arthrospira platensis extracts before and after the lactic acid fermentation and evaluation of brain accessibility, neuroprotection of different polyphenols, and simulation of digestion and evaluation of the stability of pomegranate juice anthocyanins. She has given almost 80 presentations on scientific meetings throughout the world. She is a scientific editor of Sensors & Transducers as well as guest editor of special issue of journal Antioxidants (Dietary Polyphenols and Neuroprotection).

Rui Fernando Marques da Silva

Dr. Rui Fernando Marques da Silva, is Professor of Histology&Embriology and of Neurobiology at Universidade de Lisboa, Faculdade de Farmácia, Portugal (2001-present), is an expert on cell biology, namely nerve cell cultures, cell signaling, cell death mechanisms and neurotoxicology. His main research interests are on the neurosciences area, in the topics of neurobiology, neurotoxicology, neurodevelopment and glial function associated to neurologic conditions and neurodegeneration. Neuroprotection mechanisms is the most relevant area of intervention, embracing the neuroprotective properties of food natural products and food-borne molecules, either introduced in the regular diet or as additives or medicines, by several cell and molecular mechanisms, beyond the traditional antioxidant properties described for food polyphenols.He has published more than 90 research articles, mentored over 30 post-graduate students, and given more than 150 communications in scientific meetings in several countries.He is and Editorial Board Member of scientific journal Antioxidants, guest editor of special issue Dietary Polyphenols and Neuroprotection (Antioxidants) and Associate Editor of Frontiers in Cellular Neuroscience - Non-Neuronal Cells.

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C. Mollay[1]

C. Mollay[1],* N. Kassim[1], R. Stoltzfus[2] and M. Kimanya[1]
[1]Department of Food Biotechnology and Nutritional Sciences, School of Life Sciences and Bioengineering, Nelson Mandela African Institution of Science and Technology, P.O. Box 447, Arusha,
Tanzania
[2]Goshen College, 1700 S. Main Street, Goshen, IN, 46526, USA.

Complementary Feeding in Kongwa, Tanzania: Findings to Inform a Mycotoxin Mitigation Trial

Abstract
Complementary feeding of 6 to 24 month-old infants and young children with adequate, safe and developmentally appropriate food is essential to child health. Inappropriate complementary foods and feeding practices are linked to the high incidences of undernutrition among infant and young children in most developing countries, including Tanzania. Mycotoxin risk is an additional concern, given the documented presence of aflatoxin and fumonisin in food systems of Africa, especially maize and groundnut. In preparation for a trial of mycotoxin mitigation, we conducted focus group discussions and recipe trials to explore complementary foods and feeding practices in Kongwa, a rural district of central Tanzania. Sixty mothers of infants from 6 to 18 months of age in five villages across the district were purposefully sampled. During focus group discussions, mothers reported to mostly feed their children with cereal and groundnut-based foods as thin or thick porridges. The most common porridge preparations contained cereal (mostly, maize) ranging from 66.7% to 80.0% by weight and groundnuts from 7.7% to 33.3%. The ratio of cereal to groundnut ranged from 3:1 to 4:1. For the recipe trial sessions, mothers chose similar ingredients reported during discussions to prepare complementary foods.The reliance on maize and groundnuts in complementary foods predisposes the children to undernutrition and exposure to aflatoxins and fumonisins. These formative research results suggest multiple intervention points to improve complementary feeding and reduce mycotoxin exposure in this population, including education messages package on feeding practices, mycotoxin control practices and complementary food formulation.

Keywords
Aflatoxin, complementary feeding practices, fumonisin, infant, young children

Biography
Clara J. Mollay is an associate lecturerin the department of Food Biotechnology and Nutritional Sciences at the Nelson Mandela African Institution of Science and Technology inTanzania. She is also a founder of the Arusha region Multi-sectoral Nutrition Steering Committee.She holds bachelor degree in Home Economics and Human Nutrition from Sokoine University of Agriculture (SUA), anda master's degree in Human Nutrition and Rural Development-Main subject: Human Nutritionfrom Ghent University. Her PhD research focuses on complementary feeding as linked to aflatoxins dietary exposure during infancy and early childhood growth and development.Her research profile can be found athttps://www.researchgate.net/profile/Clara-MollayShe has received national and international awards as follows: 2013, Award of an outstanding contribution to the World Kidney

Week Tanzania (The National Kidney Foundation Tanzania), 2016, Award of the McKnight poster competition (The 10th meeting of the Southern Africa Community of Practice of the Collaborative Crop Research Program (CCRP) and 2018, Award of Leadership fellowship (Institute for People, Innovations and Change in Organizations in Eastern Africa (PICO-EA) in partnership with McKnight Foundation's CCRP). Mollay'sdream is to become one of the renowned women scientists, and conduct food and nutrition research that contribute to reducing stunting among infant and young children in Africa and the World, at large.

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A.R.Henriques*,

R. Bernardo, A. Duarte, L. Tavares, A. S. Barreto, A. R. Henriques*,
CIISA – Centre for Interdisciplinary Research in Animal Health, Faculty of Veterinary Medicine, University of Lisbon, 1300-477 Lisbon, Portugal

Quantifying Viable Listeria monocytogenes in a Ready-To-Eat Salad: Combining Propidium Monoazide and Quantitative PCR

Abstract

Unlike most foodborne pathogens, Listeria monocytogenes can develop at refrigeration temperatures. Inconsistent temperatures during food production, distribution and storage, may allow this opportunistic pathogen to thrive, posing a risk to the consumer. Ready-to-eat foods present a particular challenge, as they are associated to long refrigerated shelf- lives, and do not require a heat-treatment step prior to consumption. Ready-to-eat salads endure extensive handling processes during preparation, being exposed to several contamination opportunities, including recontamination from processing surfaces and equipment.

The international standard method for enumeration of L. monocytogenes ISO 11290-2 [1] is cited as the reference method in the quantitative criteria of European Commission Regulation No. 2073/2005 [2] for L. monocytogenes. However, food products are usually contaminated at low levels and if L. monocytogenes is present below the ISO 11290-2 lower limit of detection - 10 colony-forming units per gram of food - the method lacks sufficient sensitivity to reliably quantify it [3]

In this context, it is of upmost importance to understand the behavior of L. monocytogenes in ready-to-eat foods during shelf- life. In this work, a shelf- life assessment of a ready-to-eat salad produced in an industrial facility with a history of persistent contamination by L. monocytogenes was conducted. Salad samples were stored at 4º, 12º, and 16ºC for 8 days and studied using physicochemical, conventional and molecular microbiological methods. Results of aw [4] and pH

measurements confirmed the ready-to-eat salad as able to support the growth of L. monocytogenes [6].

Conventional culture-based quantification of L. monocytogenes disclosed low countings (<1 log cfu/g). L. monocytogenes presumptive isolates (n=30) were confirmed and serogrouped using a multiplex PCR protocol

[7] and only 33% were confirmed as L. monocytogenes with the majority belonging to serogroup IVb.

PMAxx-qPCR revealed a statistically higher L. monocytogenes quantification (>3 log cfu/g) when compared to the conventional culture-based method, suggesting viable but non-culturable forms. Taken together, this study's results underline the need to combine conventional methods with more sensitive, specific, and rapid methodologies for L. monocytogenes assessment in ready-to-eat foods shelf- life studies to reduce the potential risk for consumers.

Keywords
Listeria monocytogenes; shelf-life; culture-based methods; propidium monoazide; quantitative polymerase chain reaction.

References
International Organization for Standardization (ISO). Microbiology of the Food Chain— Horizontal Method for the Detection and Enumeration of Listeria—Part 2: Enumeration Method; International Organization for Standardization: Geneva, Switzerland (2017).
European Commission. Commission Regulation (EC) No 2073/2005 of 15 November 2005 on microbiological criteria for foodstuffs. Off. J. Eur. Union, 1–25 (2005).
A. Auvolat, N.G. Besse, The challenge of enumerating Listeria monocytogenes in food. Food Microbiol., 53, 135–149, (2016).
International Organization for Standardization (ISO). Foodstuffs-Determination of Water Activity; International Organization for Standardization: Geneva, Switzerland (2017).
Norma Portuguesa. Carnes, Derivados e Produtos Cárneos—Determinação do pH. Método de Referência; Instituto Português da Qualidade, Lisboa, Portugal (1990).
European Union Reference Laboratory for Listeria monocytogenes. Technical Guidance Document for Conducting Shelf- Life Studies on Listeria monocytogenes in Ready-to-Eat Foods. Available online: https://ec.europa.eu/food/sites/food
A. Kérouanton, M. Marault, L. Petit, J. Grout, T.T. Dao, A. Brisabois, Evaluation of a multiplex PCR assay as an alternative method for Listeria monocytogenes serotyping. J. Microbiol. Methods, 80, 134–137, (2010).

Biography
Ana Rita Henriques (DVM, MSc, PhD) is an invited lecturer of Veterinary Public Health and Food Technology at the Faculty of Veterinary Medicine, University of Lisbon. She also works as a food safety consultant and auditor in several food companies.
She has published several peer-reviewed papers, oral and poster communications in scientific meetings and conferences on topics related to Food Safety, Food Technology and Food Microbiology and is currently interested in developing research using risk-benefit assessment in foods.

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March 17, 2022

P.Średnicka[1]
P.Średnicka[1], M.Roszko[2], and E. 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 Food Safety and Chemical Analysis, Prof. Wacław Dąbrowski Institute of Agricultural and Food Biotechnology – State Research Institute, Rakowiecka 36 Street, Warsaw, Poland.

BPA as Environmental Food Contaminant – Effect on Taxonomic and Metabolomic Profiles of Human Gut Microbiota

Abstract
An important source of chemical contamination of food is the migration of chemical compounds from Food Contact Materials (FCM) such asbisphenol A (BPA). In recent years, attention has been paid to possible interactions of xenobiotics with the gut microbiota (GM), which may significantly impact the biological effects induced by these compounds [1]. The aim of this research was to investigate the impact of different concentrations of BPA (10-5 M, 10-7 M, 10-11M), on human GMcomposition/ taxonomic changes and metabolome profiles.We performed in vitro batch culture using GM samples from healthy donors (n = 15).The 16S rRNA amplicon sequencing analysis did not reveal differences in β diversity (Bray-Curtis dissimilarity, Jaccard distance, unweighted and weighted UniFrac) between vehicle control and BPA treatment groups.However, it showed significant differences (P□ 0.05) in α diversity (Shannon index, Observed Features, Cho1).Moreover,low doses of BPA (10-7 M, 10-11M) reduced SCFAs concentrations (butyric acid, isobutyric acid, valeric acid, isovaleric acid)in GM post fermentation fluids. Untargeted metabolome profiling using LCHR-MS/MS (Orbitrap) revealed major impact of BPA treatment on gut metabolome. After 24h of GM culturingwith different BPA doses, quantity analysis (LCHR-MS/MS) showed significant reduction of BPA concentration. Our results provide evidence in favor of a multidirectional effect of BPA on humanGM.

Keywords
BPA, gut microbiota, SCFAs, 16S rRNA sequencing,metabolomics

References
Gálvez-Ontiveros, Y.; Páez, S.; Monteagudo, C.; Rivas, A. Endocrine Disruptors in Food: Impact on Gut Microbiota and Metabolic Diseases. Nutrients 2020, 12, 1158. https://doi.org/10.3390/nu12041158

Biography
Paulina Średnicka Research and Technical Specialist in the Laboratory of Biotechnology and Molecular Engineering IBPRS-PIB and PhD student currently conducting research on the interactions between the human gut microbiota and endocrine disrupting chemicals.

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Global Summit on Food Science and Technology
March 17, 2022

A. Papetti[1*,]
A. Papetti[1*], I. Frosi[1]
[1]University of Pavia, Drug Sciences Department, VialeTaramelli 12, 27100 Pavia, Italy.

Recovery of Bioactive Compounds from Corn (Zea mays L.) Wastes

Abstract
Nowadays, the minimization, recycling, and reuse of agro-food wastes are gaining more attention since they represent a good source of bioactive compounds with a potential positive impact on health [1]. The European Commission itself defined long-term strategies for a sustainable development, in order to support a circular economy and give a second life to wastes [2]. Among agro-food wastes, we focused our attention on the valorization of corn (cob and husk) wastes (Zea mays L.), a promising source of chemically different bioactives with healthy properties [3,4].

In the first part of the research, two green extraction methods, i.e. conventional maceration and extraction assisted by microwaves, were set-up to recover phenolic compounds using traditional hydro-alcoholic mixtures and innovative natural deep eutectic solvents [5,6]. The effects of extraction parameters were studied using an experimental design and the extraction yield was monitored by high-performance liquid chromatography (HPLC). Corn cob was richer in polyphenols than corn husk and the higher extraction yields were generally obtained by microwave assisted extraction using traditional hydro-alcoholic mixtures; therefore, the second part of the research focused on it. The extract was chemically characterized by HPLC coupled with mass spectrometry and it was tested for its potential anti-glycative activity using different in vitro systems monitoring different steps of the glycation reaction. In particular, the inhibition of Amadori products and of advanced end glycation products (AGEs) formation was evaluated by NBT assay and BSA-based system, respectively. The results indicated that the extract was able to inhibit 80-98% of AGEs generated in the used in vitro systems, in addition to a high capacity to directly trap glyoxal and methylglyoxal, well known AGEs precursors.

The research is going on with extract bioaccessibility and bioavailability studies and stability investigation in order to obtain a corn cob-based ingredient for food supplement.

Keywords
corn cob waste, polyphenols, anti-glycative activity, AGEs,HPLC-MS

References
[1] K. Kumar, A. N. Yadav, V. Kumar, P. Vyas, H. Singh Dhaliwal, Bioresour. Bioprocess., 4, 18,(2017).
[2] Grean Deal Europeo 2015, Available online at: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_it.
[3] F. Lao, M. M. Giusti, J. Cereal Sci., 80, 87-93,(2017).
[4] Z. Yang, W. Zhai, Innov. Food Sci. Emerg. Technol., 11, 470-476, (2010).
[5] Y. Dai, J.V. Spronsen, G.-J. Witkamp, R. Verpoorte, Y.H. Choi, Anal. Chem. Acta,766, 61-68,(2013).
[6] M. Ruesgas-Ramón, M.C. Figueroa-Espinoza, E. Durand, J. Agric. Food Chem.,65, 3591-

3601,(2017).

Biography

Adele Papetti graduated in Chemistry and Pharmaceutical Technologies, received post-lauream degree in Industrial Pharmacy and Ph.D. degree in Pharmaceutical Chemistryat the University of Pavia. From 2018 she is Associate Professor in Food Chemistry.

Her current teaching includes Dietetics, Food Chemistry, Food Biotechnology,Food and cosmetics. She has been supervisor of 150 dissertation or thesis projects for the B.Sc., M.Sc. and Ph.D. degrees in Pharmacy, Chemistry and Pharmaceutical Technologies, and Biotechnologies.

Since 2020 Director of Master's degree in "Nutraceuticals and food supplements: from raw material to their clinical uses", member of the scientific board of SocietàItalianaFormulatori in Nutraceutica (SIFNut), and of the teaching board of PhD in Chemical and Pharmaceutical Sciences and Related Industrial Innovation.

She is a Member of the Italian Chemical Society (SCI) and a Professional Member of the Institute of Food Technologists (IFT).

Author of 85 papers, 2 book chapter, h-index: 28,Citation: 2472 (Scopus)

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Global Summit on Food Science and Technology
March 17, 2022

A. L. Gaveta, A. R. Henriques*

Faculty of Veterinary Medicine, University of Lisbon, 1300-477 Lisbon, Portugal

Frozen Foods Storage Temperatures Assessment in Industrial Cold Storage Facilities

Abstract
Due to food quality and safety reasons, frozen foods have specific storage requirements. Although cold storage temperatures affect microorganisms in foods by reducing microbial growth rates, if relevant temperature fluctuations occur, cold-stored foods safety might be compromised. On the other hand, even if temperature fluctuations are not sufficient to threaten food safety, they may compromise food quality, due to excessive ice crystals development or due to food's cold burn. All of these alterations may lead to the disapproval of frozen foods by the consumer, thus temperature monitoring throughout the food chain is imperative.
In this work, the main aim was to evaluate frozen food storage temperatures in industrial cold storage facilities. To attain this purpose, temperature monitoring was performed in 12 different locations within frozen storage units, as well as inside the packages of selected food products, using temperature data loggers (AKO-157740 - Ako, Japan). Simultaneously, recorded temperatures using the frozen unit fixed data logger were also considered. Three replicates were performed in different working days to better reflect temperature fluctuation.
Results revealed that storage temperatures were seldom above the critical limits of the food safety management system, with average registered temperatures of -17.79±0.20ºC. Inside the stored frozen food package, the obtain average temperatures were – 17.34±0.14ºC. Although frozen food safety was not jeopardized, food quality constraints urged the implementation of adequate corrective actions. Structural corrections were put in place to improve the insulation of the frozen storage units.

Keywords
Frozen food; cold chain; temperature; monitoring; corrective action.

References
Codex Alimentarius Commission. Food hygiene basic texts. Food and Agriculture Organization of the United Nations. Geneva, Switzerland (2006).
J. Coelho. Energia e fluídos – volume 3: transferência de calor. Ed. Blucher. São Paulo. Brasil. (2016).
O. Erkmen, T. P. Bozoglu. Food Microbiology: principles into practice. Vol. 1. John Wiley & Sons West Sussex. UK. (2016).

Biography
Ana Rita Henriques (DVM, MSc, PhD) is an invited lecturer of Veterinary Public Health and Food Technology at the Faculty of Veterinary Medicine, University of Lisbon. She also works as a food safety consultant and auditor in several food companies. She has published several peer-reviewed papers and oral and poster communications in scientific meetings and conferences on topics related to Food Safety and Food Microbiology and is currently interested in developing research using risk-benefit assessment in foods.

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Tamara Popović[1]

Tamara Popović[1], Sunčica Borozan[2], JasminaDebeljak Martačić[1], Silvio de Luka[3], Aleksandar Trbović[3], Maria Glibetić[1]

[1]Institute for medical research University of Belgrade
[2]Faculty of Veterinary Medicine University of Belgrade
[3]Institute for pathophysiology Medical Faculty University of Belgrade

N-3 Fatty Acids and its Benefit Effect on Senescence in Rats

Abstract

Senescence can be defined as a progressive irreversible deterioration of cellular and tissue functions with advancing age, leading to the gradual impairement of homeostasis.Age-associated functional deteriorations , therefore, likely go on without being recognized. Biomolecules such lipids and polysaharides are important in the maintance of life and therefore involved in the deteriorative processes of cell and tisuue in aging. The phospholipids, fatty acids (FAs) composition and cholesterol content in cell membranes are basic determinants of the physical properties of membranes. The FAs profile in tissues partly reflects not only the dietary fat intake, but also the efficiency of FAs metabolism in the body.Liver has an important role in synthesis and metabolism of phospholipids (PL), which are major structural components of cell membranes. Structure of hepatocyte membrane PL is dependent on nutritional intake and affects its metabolic functions. The FAs profile of liver PL and TG is known to be influenced by many factors, including dietary intake, age, gender, and endogenous metabolism.

Experimental model of aging (young Wistar rats-3 months, n=10 and aged Wistar rats-18months, n=10) in a great extent showed differences in phospholipids fatty acids profiles in liver as well as in lipid peroxidation and LDH5 isoenzyme in hepatocytes. FAs profiles of phospholipids were determined by GC. Lipid peroxidation were determined spectrophotometrically While LDH isoenzymes were determined by electrophoresis.

It seems that aging itself is a risk factor and at least in part lead to higher saturation of FAs in tissues phospholipids. Also, n-6/n-3 ratio as a risk factor become higher with aging. Lipid peroxidation in aged cells is higher and as a risk factor of oxidative stress more compromised with aging. Overall LDH and LDH 5 is increased in aging as well. Dietary FAs composition and aging significantly correlated to cell membrane FAs composition and lipid peroxidation.

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March 17, 2022

A. Drozdowska[1*]
A. Drozdowska[1*], M. Falkenstein[2], G. Jendrusch[3], P. Platen[3], T. Lücke[1], M. Kersting[1], and K. Sinningen[1]

[1]Research Department of Child Nutrition, University Children`s Hospital, Ruhr University Bochum, Germany.
[2]ALA Institute, Bochum, Germany
[3]Department of Sports Medicine and Sports Nutrition, Ruhr University Bochum, Germany

Associations between Children's Breakfast Behavior, Other Lifestyle Habits and Cognition

Abstract
Breakfast is believed to be beneficial for the cognitive performance of school children. However, breakfast is the most frequently skipped meal among children. In addition, children spend more time with screen-based media devices, are less physically active and have sleep deficits, all of which potentially affect cognition. The aim of this analysis was therefore to investigate the mediating effects of breakfast behaviour and other habits on specific cognitive demands. In two interventional trials (CogniDO GI; CogniDROP) students from the 5th and 6th grade of a comprehensive school in Germany (n = 495) performed a computerized Switch Task to test spatial attention and switching ability. In a secondary analysis, behavioral habits, i.e., skipping breakfast on a school day, frequency of physical activity (PA) outside school, nighttime sleep, and media screen time, that had been collected from children were analyzed as mediating variables. An association matrix was constructed to show the relationship between the variables. 16.6% of children left home in the morning without drinking and 11.2% skipped breakfast. Half of the children were not sufficiently physically active according to the guidelines of WHO, while 21.5 % of the children spent at least 3 hours with media screen. Average sleep was 9:18 hours and correlated with skipping breakfast ($p = 0.008$), media screen time ($p = 0.034$) and reaction time in the Switch Task ($p < 0.05$). Skipping drinking in the morning was associated with an increased water intake of about 200 ml at school. Higher PA was positively related to breakfast habits ($p = 0.003$) and reaction time in the Switch task ($p < 0.05$), but was negatively related to media screen ($p = 0.034$). Overall, the findings showed associations between spatial attention and task switching and children's behavior. Skipping breakfast in the morning seemed to be associated with other unfavorable habits, such as media screen time and PA. These data suggest that unfavorable behaviors in children mostly run in packs. An overall supportive environment for healthy lifestyle could positively influence children's cognitive abilities.

Supported: Uniscientia Foundation, Vaduz, Liechtenstein

Keywords
cognition, breakfast, sleep, physical activity, media screen

Biography
Mrs. Alina Drozdowska, PhD student, is a Nutrition and Sports Scientist at the Research Department of Child Nutrition, Ruhr University Bochum, Germany, (2017-present). She started her professional path in 2003 as a university-certified fitness trainer and supported people to lead a healthy lifestyle. She was a member of the Federal Association of German Personal Trainers e.V. She spent her first year of research in 2015 in the field of human nutrition and investigated the nutritional behaviour

of pregnant women as part of the PRINCE study (Prenatal Identification of Children's Health)at the University Medical Center Hamburg-Eppendorf (UKE). Her current research focuses on studying children's cognitive performance in the school environment, as well as nutrition and physical activity. In this context, she was able to investigate the importance of drinking water at school and the physical fitness of school children for cognitive performance.

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