

INTERNATIONAL

NUTRITION RESEARCH CONFERENCE

September 09, 2021

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INTERNATIONAL
NUTRITION RESEARCH
CONFERENCE

SEPTEMBER 09, 2021

Theme:

Future trends in the rising technology
for nutritional science

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About **MAGNUS GROUP**

Magnus Group (MG) is initiated to meet a need and to pursue collective goals of the scientific community specifically focusing in the field of Sciences, Engineering and technology to endorse exchanging of the ideas & knowledge which facilitate the collaboration between the scientists, academicians and researchers of same field or interdisciplinary research. Magnus group is proficient in organizing conferences, meetings, seminars and workshops with the ingenious and peerless speakers throughout the world providing you and your organization with broad range of networking opportunities to globalize your research and create your own identity. Our conference and workshops can be well titled as 'ocean of knowledge' where you can sail your boat and pick the pearls, leading the way for innovative research and strategies empowering the strength by overwhelming the complications associated with in the respective fields.

Participation from 90 different countries and 1090 different Universities have contributed to the success of our conferences. Our first International Conference was organized on Oncology and Radiology (ICOR) in Dubai, UAE. Our conferences usually run for 2-3 days completely covering Keynote & Oral sessions along with workshops and poster presentations. Our organization runs promptly with dedicated and proficient employees' managing different conferences throughout the world, without compromising service and quality.

About **Nutrition 2021**

Magnus Group welcomes members from different parts of the world to join our Online Event - "International Nutrition Research Conference" scheduled during September 09, 2021. It includes prompt Keynote presentations, Oral presentations, Poster presentations, Workshops/symposiums, Exhibitions, interactive and informal exchanges. This is going to be one of the most remarkable events of the year. Through the theme "Future trends in the rising technology for Nutritional Sciences" conference will explore the advances in Food and Nutrition, Health and Wellness, Deficiencies, Nutraceuticals and supplements, fitness etc. Nutrition 2021 goal is to bring together bright minds to gives talk that are ideas-focused, and on a wide range of scientific sessions, to faster learning inspiration. It will provide an international platform to share expertise, foster collaborations, discover new clinical information, stay current with trends and networking.

KEYNOTE FORUM

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SEP 09, 2021

NUTRITION 2021





David Henman

Research and Innovation, Rivalea Australia, Corowa, NSW, Australia

International Nutrition Research Conference

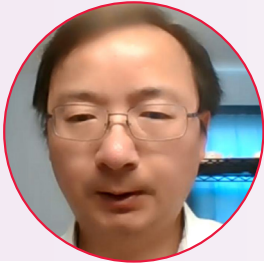
Technology has accelerated the development of pig nutrition as we have moved from formulating with 10 nutrients to now up to 200 nutrients. Precision has replaced the art of nutrition as diagnostic tools such as NIR are now common place in most feed mills. In-depth diagnostic testing has led to a knowledge of the role of the increasing number of nutrients and research has elucidated their role in pig nutrition. The development of enzymes has revolutionised the understanding of digestibility of fibre and how to utilise it effectively. This has also highlighted the interactions between nutrients and how that can influence the performance of the pig. The explosion of the 'omics has allowed and a greater understanding of the subtleties of the interactions between the environment, the feed and the pig. Our concept of the environment has been expanded to include the biome of the gastrointestinal tract. This interaction is the new frontier in pig and animal science and will be the way in which we deliver pig nutrition and health without antibiotics into the future. The combination of the new technology with the understanding of metabolism is the key to the development of pig nutrition and transcribing that to other species.

Audience Take Away:

- Evaluation of the new technologies developed in the pig Industry can refine the theory of nutrition in man and other animals
- The use of the pig to look at human food concepts allows a more definitive adoption of technologies due to the larger scale of experimentation
- How utilization of human diagnostic technologies can be used in pig nutrition which may widen the scope of those technologies back to human nutrition

Biography:

Mr David Henman graduated from Sydney University in 1987 and began his career with PIC as a Trainee Manager providing data for the development of the Auspig simulation model. Moving to Colborn Dawes Australia in 1989 and then joining Bunge, now Rivalea Australia (the largest integrated pig producer in Australia) in 1991 and since 1995 involved in developing research objectives for internal research as well as principle investigator for research work conducted on behalf of other commercial companies and the pig industry research bodies and completing a Master of Science in Vet Science in 2004.



Zeneng Wang

Department of Cardiovascular and Metabolic Sciences, Lerner Research Institute, Cleveland Clinic, Cleveland, Ohio, USA

Trimethylamine N-oxide metaorganismal pathway, a universal metabolic pathway, contributes to cardiometabolic disease

Gut microbes can metabolize nutrient with structural formula containing trimethylamine (TMA) moiety, such as phosphatidylcholine, choline, carnitine and β -butyrobetaine in diet, to produce TMA and TMA is further oxidized as trimethylamine N-oxide (TMAO) catalyzed by host hepatic Flavin monooxygenases (FMOs). The TMAO metaorganismal pathway is a universal metabolic pathway, contributing to cardiometabolic disease. TMAO shows multiple pro-atherogenic properties including activating MAPK and NF κ B signaling, NLRP3 inflammasome and PERK pathway, leading to atherosclerosis, thrombosis, heart hypertrophy, chronic kidney disease, fatty liver disease and obesity even gallstone formation. TMAO can independently predict future risk for major adverse cardiac events (=non-fatal myocardial infarction, stroke and death). Targeting this metabolic pathway by limiting TMA precursor enriched diet consumption, administration of prebiotic or probiotic to decrease the bacterium abundance which encodes enzymes involved in the conversion of TMA precursors to TMA or inhibitors to TMA lyase and FMOs, can decrease circulating TMAO, therefore ameliorating cardiometabolic disease.

Audience Take Away:

- Avoiding consumption of TMA precursor enriched diet, such as red meat, to assure low circulating TMAO will be beneficial to decrease risk for cardiometabolic disease
- Not only diet, but also gut microbiota affects cardiovascular health
- Optimize gut microbiota community by intaking prebiotic and probiotic will be beneficial human health

Biography:

Dr. Zeneng Wang received bachelor's degree from Fudan University, and master's degree and PhD from Peking University. Since Jan, 2003, she joined Cleveland Clinic Lerner Research Institute as Postdoctoral Research Fellow, Research Associate, Project Scientist and now Staff Scientist. He was awarded American Heart Association Scientist Development Grant and NIH RO1 grants. Dr Wang reported the association between TMAO metaorganismal pathway and cardiovascular disease the first time. So far, he has published more than 97 papers in high-impact journals, including Nature, Cell, Nature Medicine, European Heart Journal and Cell Metabolism as well.



Raffaele Pilla

Pharm D, PhD – St. John of God Hospital – Fatebenefratelli, Benevento, Italy

Therapeutic ketosis and the broad field of applications for the ketogenic diet: Ketone ester applications & clinical updates

It has been recently shown that nutritional ketosis is effective against seizure disorders and various acute/chronic neurological disorders. Physiologically, glucose is the primary metabolic fuel for cells. However, many neurodegenerative disorders have been associated with impaired glucose transport/metabolism and with mitochondrial dysfunction, such as Alzheimer's/Parkinson's disease, general seizure disorders, and traumatic brain injury. Ketone bodies and tricarboxylic acid cycle intermediates represent alternative fuels for the brain and can bypass the ratelimiting steps associated with impaired neuronal glucose metabolism. Therefore, therapeutic ketosis can be considered as a metabolic therapy by providing alternative energy substrates. It has been estimated that the brain derives over 60% of its total energy from ketones when glucose availability is limited. In fact, after prolonged periods of fasting or ketogenic diet (KD), the body utilizes energy obtained from free fatty acids (FFAs) released from adipose tissue. Because the brain is unable to derive significant energy from FFAs, hepatic ketogenesis converts FFAs into ketone bodies-hydroxybutyrate (BHB) and acetoacetate (AcAc)-while a percentage of AcAc spontaneously decarboxylates to acetone. Large quantities of ketone bodies accumulate in the blood through this mechanism. This represents a state of normal physiological ketosis and can be therapeutic. Ketone bodies are transported across the blood-brain barrier by monocarboxylic acid transporters to fuel brain function. Starvation or nutritional ketosis is an essential survival mechanism that ensures metabolic flexibility during prolonged fasting or lack of carbohydrate ingestion. Therapeutic ketosis leads to metabolic adaptations that may improve brain metabolism, restore mitochondrial ATP production, decrease reactive oxygen species production, reduce inflammation, and increase neurotrophic factors' function. It has been shown that KD mimics the effects of fasting and the lack of glucose/insulin signaling, promoting a metabolic shift towards fatty acid utilization. In this work, the author reports a number of successful case reports treated through metabolic ketosis.

Biography:

Raffaele Pilla, Pharm.D., Ph.D., Doctor Europaeus, received his Master's degree in Pharmacy at G. d'Annunzio University in Chieti-Pescara, Italy in 2005, where he also served internships at the Cell Physiology Laboratory and Molecular Biology Laboratory. Prior, he was an Erasmus Student at Faculté de Pharmacie de Reims in Reims, France. He received his Doctor Europaeus in 2010 from Pitié-Salpêtrière Institute in Paris, France. Also in 2010, he received his Ph.D. in Biochemistry, Physiology, and Pathology of Muscle at G. d'Annunzio University in Chieti-Pescara, Italy. He was hired as a Postdoctoral Scholar in the Department of Pharmacology and Physiology at the University of South Florida in Tampa, on two research grants funded by the Office of Naval Research (US Navy) and Divers' Alert Network. He has written and lectured widely worldwide. He has been involved in ongoing research at the University of South Florida with the use of ketone esters.



Angelo Michele Carella

Internal Medicine Department, "T. Masselli-Mascia" Hospital - 71016 San Severo (Foggia), Italy

MicroRNAs and Gut Microbiota: is there a link? Update and Review

Gut Microbiota (GM), a microbial community gathering more than 100 trillion microorganisms in gastrointestinal tract, plays specific functions as nutrient metabolism, gut mucosa integrity, immunomodulation and protection against pathogens; GM also controls adipose tissue expansion and food intake. One of the major difficulties in GM study is the ability to culture its microorganisms; since GM encodes over 3 million genes producing thousands of metabolites, recent technologies have allowed to phylogenetically identify and quantify GM components by analyzing nucleic acids directly extracted from stools. microRNAs (miRNAs) are short noncoding RNA sequences regulating biological, metabolic and cellular processes; miRNAs may also have a role in molecular mechanisms linked to pathways of some diseases, including diabetes, obesity and cardiovascular disease. Discovery of miRNAs easily measurable in plasma and other body fluids, led to the hypothesis of their potential role as disease indicators. There is evidence of correlation between alterations of GM composition and several gastrointestinal disorders, as Irritable Bowel Syndrome, Inflammatory Bowel Disease (IBD), Celiac Disease and Colorectal Cancer (CRC), and also metabolic disorders and brain-related disorders, although GM role in their pathogenesis is poorly understood yet. Intestinal miRNAs develop from two main sources: the host and the food; intestinal epithelial cells are the main contributors of host-derived miRNAs, instead miRNAs from food can be absorbed by host and can affect its gene expression; moreover, dietary components are capable to modify miRNA expression. Several miRNAs can have specific effects on gut bacterial growth and influence survival and composition of gut bacteria; in addition miRNAs can enter bacteria and alter bacterial gene. The abundance of miRNA can be inversely correlated with the abundance of microbes and this suggests that microbes might take up miRNAs and these miRNAs might in turn affect microbes. On the other hand, GM regulates host miRNAs expression in the gut, suggesting that GM can control host innate immune responses by regulating of miRNA expression. It has been proved that fecal microbiota transplantation has high capacity for treating different diseases and GM can be shaped by administration of fecal miRNAs; this is an important potential of application since diseases related to changes in GM might be treated using synthetic specific miRNAs. In nearly all studies, detection of miRNAs was performed on stools or gut tissue samples; these procedures were preferred to detection of circulating miRNAs and much stronger miRNA expression changes were observed in feces. Fecal miRNAs, whose profile can dependent on functionally relevant GM alterations, could be used as a new tool to assess microbiota healthiness. Dysregulation of fecal miRNAs was found over all in CRC and in IBD whereas there is poor evidence in other gastrointestinal disorders and GM dysbiosis related diseases; in these cases, links between miRNAs dysregulation and GM are still unclear and uncertain. It must be expected that miRNAs play a role in mediating host-microbiota metabolic interactions. Additional studies are needed to understand miRNA-microbiota interactions and delineate their precise mechanisms, in addition to establishing which kinds of microbiota can modulate miRNA expression by combining high-throughput technologies.

Audience Take Away:

- This review focus on: 1) potential future role of microRNAs in the Gut Microbiota study; 2) possible application of microRNA detection as disease indicators; 3) potential of application in the treatment of diseases related to Gut Microbiota dysbiosis using synthetic specific miRNAs (gene-targeting therapy?).

- This work could further stimulate the Researchers; if presented data will be confirmed in more extensive studies including a larger number of patients, they could improve early diagnosis, follow-up and treatment of Gut Microbiota dysbiosis and its relate diseases (over all Colorectal cancer). In this way, I think the effort would be significantly remarkable
- Next step will be to evaluate whether microRNAs detection can be applied in future daily clinical practice and routine examinations
- Main limits/criticisms: costs and availability of quantifying techniques; high detection cost is the main limitations on the use of these nucleotides in daily clinical practice; new low-cost and wide availability assays to detect microRNA with high sensitivity and specificity are need

Biography:

Angelo Michele Carella after graduating in Medicine, have obtained specialization in Internal Medicine, university Master in Healthcare Management and postgraduate courses on Diabetes and Obesity. Medical Doctor at the Internal Medicine Department of “T. Masselli - Maccia” Hospital in San Severo (Italy). Past teacher at Health Professions degree course of Foggia Medical University. Editorial Board member/Reviewer of several scientific journals; Author of about 50 scientific publications; Member of D&CVD EASD Study Group; Investigator in clinical studies (DAVID, ESPORT, ATA-AE, DIAMOND) published in international journals; Speaker at numerous scientific congresses and meetings. Rregistered in ORCID, Google Scholar and Research Gate.



Ascension Marcos

Institute of Food Science, Technology and Nutrition (ICTAN). Spanish National Research Council (CSIC). Madrid, Spain

Immunonutrition in the COVID-19 era

At the end of 2019, a serious health problem arose that has led us to unprecedented situations, forcing us to adapt too quickly to the new reality. The current and unexpected pandemic caused by the attack of SARS-Cov-2 (Severe Acute Respiratory Syndrome Coronavirus) has been promoting a huge impact on society worldwide at all levels, among which we can highlight the effect not only on the general metabolism and the immune system but also on the emotional state of the general population. Faced with this new situation, different theories have appeared about the origin of the pandemic and about the possible treatments that some of them are still in the experimental phase. From the application of drugs that had previously been used to cure other pathologies, to research for the development of specific vaccines against this virus and its possible variants, scientists work hard to eliminate the consequences of the serious damage that COVID-19 has generated. However, despite having the experience acquired during more than one year with this health alarm due to the vast mortality caused and the shortage of means at some critical moments, the great importance of food and nutrition, as well as the nutritional status under these conditions have not been sufficiently taken into account. Since the late 1950s, when the interactions between nutrition, infection and immunity began to be studied, numerous research projects have been carried out to date resulting in the development of a new field of research called Immunonutrition (1-3). COVID-19 is known to lead to multi-organ failure in many cases, affecting severely both the immune system and the microbiota, producing a phenomenon of dysbiosis with a significant imbalance in favour of pathogenic microorganisms to the detriment of the beneficial bacteria. In addition, the gut microbiota-brain axis is an innovative key area of research related to nutrition and the immune system. In summary, food as a whole and its components in particular, play an important role in the immunomodulation, and therefore, in health. In fact, both chronic deficits and excesses or even the imbalance between nutrients, can jeopardize the stability of the general metabolism (4). Consequently, the study of Immunonutrition is key to understanding the nutritional situation and to consequently to using the appropriate means to prevent any immune disorder. Therefore, bearing in mind that food is fundamental in our lives, governments and health authorities should be more careful avoiding situations of malnutrition in the general population (obesity or undernutrition) in order to avoid SARS-Cov-2 infection and harmful COVID-19 outcomes.

1. Scrimshaw NS, Taylor CE, Gordon JE (1959) Interactions of nutrition and infection. *Am. J. Med. Sci.* 237, 367-403.
2. Scrimshaw NS, Taylor CE, Gordon JE (1968) Interactions of nutrition and infection. *Monogr Ser World Health Organ* 57, 3-329.
3. Chandra RK (1992) Protein-energy malnutrition and immunological responses. *J Nutr* 122 (Suppl 3), 597-600.
4. Calder PC. Nutrition, immunity and COVID-19. *BMJ Nutrition, Prevention & Health* 2020;3:e000085. doi:10.1136/bmjnph-2020-000085

Audience Take Away:

- Immunonutrition is a very broad area of knowledge and includes many interrelated areas. The audience will be more sensible to use the knowledge of the interactions among nutrition, immunology and microbiota
- The knowledge of Immunonutrition is essential in many aspects of health, addressed to any specialty in Medicine. Doctors can achieve better diagnoses and treatments based on the analysis of diet variables and immunological parameters, as well as delve deeper the interaction of both fields of knowledge

- So, the Immunonutrition subject can be used as a field of research or teaching, by providing practical solutions to certain health problems, being physicians more efficient in their jobs

Biography:

Pioneer in the field of Immunonutrition, Founder and President of the International Society for Immunonutrition (ISIN). In 2006 Prof. Marcos achieved the top position as Research Professor at the Spanish National Research Council. Past-President of the Spanish Societies of Nutrition, Food and Dietetics (FESNAD) Past-President of the Federation of European Nutrition Societies (FENS) Responsible for Institutional Affairs of the Spanish Society of Microbiota, Probiotics and Prebiotics (SEMiPyP) 95 research projects, 578 publications (303 SCI original articles, 31 SCI reviews, 17 SCI special issues, 86 non-SCI original articles and 7 non-SCI reviews, 114 chapters, 8 books and 9 book editions.



Justyna Zulewska

Department of Dairy Science and Quality Management, Faculty of Food Sciences, University of Warmia and Mazury in Olsztyn, Poland

Lactose intolerance – how does it affects dairy industry?

Lactose intolerance is a condition in which a person cannot digest or absorb lactose due to a genetically programmed decrease in intestinal galactosidase (lactase). People who follow a strict lactose-free diet often suffer from various nutritional deficiencies that can generate various health disadvantages. Increasing the amount of cheese in lactose intolerant people diet provides the right amount of energy (fat), fulfil calcium requirements and keep the lactose intake low. The aim of this study was to evaluate the properties of tvarog cheeses (traditional acid coagulated cheese produced in Poland and other Eastern European countries) produced with the addition of lactose hydrolysing enzyme – β -galactosidase. Standard tvarog (traditional production protocol) and tvarog with normalized lactose content (lactose-free tvarog) were produced in semi-industrial scale. The lactose content in cheese were measured using Lactosens test (Chr. Hansen) involving a direct assay on a biochip. The cheeses were subjected to texture profile analysis and sensory analysis. Experimental cheeses were compared with commercial products on the same market segment. The study showed that the enzyme addition neither altered the acidity of milk nor the acidity of obtained curds. Dynamics of milk acidification and cheese yields were similar in case of lactose-free tvarog production process and standard tvarog production process. Lactose content in lactose-free tvarog was below 0.01%. Lactose-free cheeses contained slightly lower amount of protein and fat; however, slightly longer drainage time could possibly affect the composition of the final product. Texture profile analysis indicated that cheeses with reduced lactose content were characterized by increased cohesiveness. Sensory analysis conducted by the panelists showed that the overall rating was higher for lactose-free cheese compared to standard tvarog and commercial products. The study confirmed that the precise control of technological parameters enables the production of high-quality lactose-free cheeses with properties similar to traditionally made tvarog.

Audience Take Away:

- The trends in dairy products development will be presented
- The technological and regulatory issues related to development of functional food in Europe, especially in relation to dairy products will be discussed
- The consumer perception of novel food will be presented

Biography:

Dr. Justyna Zulewska studied Food Technology and Nutrition at Olsztyn Academy of Agriculture and Technology, Poland. Her doctorate was received in 2004 from University of Warmia and Mazury in Olsztyn, Poland with her dissertation in the area of functional properties of whey proteins. She then has been employed at University of Warmia and Mazury in Olsztyn, Poland. She completed several fellowships at Universidade Catolica Portuguesa, Universidade de Aveiro, University of Hawaii at Manoa, and Cornell University. She has published over 80 journal articles and presented over 90 communications/abstracts to national and international conferences. Her main research interests are: factors influencing quality and yield of cheese, production of cheese with altered ratio of casein fractions, whey management, factors affecting the efficiency of filtration processes, food product development, functional dairy ingredients.

Riccardo Baschetti

Retired Medical Inspector, Italian State Railways, Rua Cauby Damasceno 855,
Icaraí, Caucaia, CE, 61620-250, Brazil

Evolutionary physiology shows the need for an unprecedented study on sugar

Many experimental studies on sugar (sucrose) omitted its form of ingestion. Often their findings were mutually incompatible. A comparison of the results of the few studies that administered sugar in a single specified form suggests that the metabolic effects of sugar depend on its form of ingestion, because even 80% of calories as diluted sugar proved harmless, but only 30% of calories as undiluted sugar proved harmful. These opposite effects of sugar can be explained by the published hypothesis that evolution adapted genetically our ancestors to cope with sugar only in diluted forms, because prehistorically diluted sugar was available abundantly in fresh fruits, but undiluted sugar was inexistent. The purpose of this review, based mainly on the evolutionary interpretation of published data of physiology, is to encourage researchers to perform an unprecedented experimental study to compare the metabolic effects of diluted sugar with the effects of undiluted sugar. The data of physiology analyzed in this review suggest that the absorption of diluted sugar within the caloric range of total sugars diluted in fresh fruits is slow and calorie-constant, thus preserving blood glucose homeostasis, whereas the absorption of concentrated sugar exceeding that caloric range is rapid, which can disrupt blood glucose homeostasis. Dietary salt, which was unknown to prehistoric humans, unnaturally accelerates the absorption of sugars. This can explain the harmful effects attributed to sugar-sweetened beverages per se, because these drinks are generally co-ingested with foods containing salt, which partly yet unavoidably passes into those beverages, thereby unhealthily accelerating their absorption.

SPEAKERS

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Hayley Carroll MD

Holy Name Medical Center, USA

Effects of Timing and Compliance of Arginine-Supplemented Immunonutrition on Surgical Outcomes for Major Cancer Operations

Introduction: Effects of timing of immunonutrition administration (preoperative vs. postoperative vs. perioperative) and compliance on surgical outcomes for patients undergoing major operation for cancer is unclear.

Methods: This study was a prospective, non-randomized trial of patients undergoing surgical management of gastrointestinal, gynecologic, and urologic malignancies between 2017 and 2021. Participants underwent teaching and instructed to take IMPACT Advanced Recovery (AR) Formula three times daily for five days before and after surgery once cleared by the surgeon for clear liquid diet. The dietician tracked their adherence. For each period (preoperative and postoperative), those who took in 12 to 15 cartons were considered highly compliant; 8 to 11 cartons were considered moderately compliant; less than 8 were considered minimally compliant.

Results: The final study size included 115 patients. Only, 33 patients (28.7%) were considered highly compliant throughout the perioperative period. Nearly 81 (70.4%) patients were highly compliant in the preoperative period. Postoperative compliance was substantially lower with only 27 (23.5%) patients considered highly compliant. The overall study demonstrated a postoperative complication rate of 14.8% with composite infection rate of 9.6%, superficial surgical site infection rate of 5.2%, and deep wound infection rate of 2.6%. The 30-day hospital readmission rate was 20%. Within the postoperative only compliance analysis, the high compliance group resulted in better unadjusted outcomes with lower rates of postoperative complications (20.3% vs. 14.3% vs 0.0%), composite infections (13.5% vs 7.1% vs 0.0%), SSI (6.8% vs 7.1% vs 0.0%), deep wound infections (4.1% vs 0.0% vs 0.0%), non-infectious complications (6.8% vs 7.1% vs 0.0%), and hospital readmissions within 30 days (24.3% vs 14.3% vs 11.1%). Within the preoperative only compliance analysis, the high compliance group did not result in better unadjusted outcomes.

Conclusion: Improved immunonutrition compliance appears to have a positive impact on surgical outcomes when consumed in the postoperative period. Further studies need to be done addressing the potential dose-response relationship of immunonutrition intake. Additionally, compliance needs to be promoted during the postoperative period as there appears to be a significant drop off in compliance during this phase.

Keywords: Arginine Supplementation, Immunonutrition, IMPACT, Quality Improvement, HIPEC.



Hipolyana Simone de Oliveira Alves

Coordination of Agropecuaria, State Technical School of Palmares, Palmares, Pernambuco, Brasil

Seed Treatment in a Controlled Environment

The world population grows more every day, and the need for food from the same population grows. The technology works to increase the amount of food, maintaining quality and sanity. Among the current techniques of planting is the treatment of seeds with micronutrients, which aims to decrease the base fertilization and supply the initial need of the seedling, which absorbs the reserves of seeds, but that needs complementary fertilizer as soon as its Primary root touches the substrate in which it was sown. Still on this theme, we approached the treatment of pear and apple seeds with micronutrients and their response when planted in an adverse climate, that is, response of seeds of exotic fruit – of temperate climate – in regions of warm climate. We will also discuss the use of micronutrient treatment in pumpkin seeds and sprouting (cassava seeds), which have positive responses in hot and humid climate environments. The central idea of this research is to enable sowing on different substrates, with seeds treated with specific nutrients, in order to guarantee the independence of the seedling in relation to its initial nutrition. Therefore, we will teach enriching discussions about the responses of the most varied types of seeds in relation to the use of micronutrients, especially those that can contribute to the reduction of global hunger. Our work was conducted in two phases, being the first related to the treatment of seeds with potassium, nitrogen, zinc and copper, made in the Chemistry and Biology Laboratory of the technical teaching institution of Palmares, located in the South Forest Pernambucana, Brazil. The second stage was the planting of these treated seeds, which remained for six months stored in a refrigerator environment. They were planted under local environmental conditions and their data were collected. The experiment is still underway, and the current treatment is done in citrus seeds. The intent is that until the date we have more data to share.

Audience Take Away:

- Unlike it seems, micronutrient seed treatment is not something that is out of the grower’s reach. Some of these nutrients can easily be bought from farm houses and the treatment is simple, just as storage only requires the refrigerator environment, an object that everyone has in their homes
- This practice is easily repeated in laboratories and can be performed with different raw materials
- This practice will contribute to uniformity of planting, reduction of chemical fertilization and recovery of seeds with low vigor. This research can be used to help expand the study of seed treatment by simplifying direct application

Biography:

MSc. Hipolyana Simone de Oliveira Alves, studied Agronomy at the Federal University of Alagoas, Brazil (2008) and graduated Master in 2018 and Specialist in Rural Extension in 2016, at the same University. Today she teaches in the Agricultural Technician course at Palmares State Technical School, where she works as a Researcher. For UNITOLEDO in partnership with FGV is MBA in People Management and for Uninassau undergraduate in Pedagogy. She is an Agricultural Consultant at the Qualified Producers Cooperative and collaborates as a Reviewer at the Journal of Applied Life Science International.



Dalia El Khoury PhD RD^{1*}, Karol-Ann Roy MSc¹, Joel Hansen MSc¹, Madelyn Tabakos BSc¹, John J. M. Dwyer PhD¹, Margo Mountjoy MD PhD², Lawrence L. Spriet PhD³, Paula Brauer PhD RD FDC¹

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The status of supplement use among Canadian university students: is there a need for additional nutrition education programs?

Given the increased use of dietary supplements with little or no professional guidance, we identified a need to explore the prevalence and determinants of dietary supplement use in populations at risk including university students. In fact, there is evidence to support the harmful implications of contamination with prohibited substances, supplement-supplement interactions, supplement-drug interactions, allergic reactions, and incorrect product dosing when taking dietary supplements without or with little professional guidance. Irrespective of physical activity levels, we identified a prevalent use of supplements among Canadian athlete and non-athlete university students. Overall, 58.3% of varsity athlete and 43.4% of non-athlete students at the University of Guelph, Ontario, Canada, reported having used at least one type of dietary supplement in the past six months. Although most participants referred to healthcare professionals for information on dietary supplements, many continued to depend on unreliable sources including family, friends, peers, the internet and the media. Using the Theory of Planned Behavior model to explore the psychosocial determinants of supplement use, attitude, injunctive norm and perceived behavioral control were found to be significant predictors of the intention to use dietary supplements, and attitude, injunctive norm and intention were significant predictors of engaging in the supplementation behavior. These findings highlight the need for the development and dissemination of additional nutrition education programs and resources on dietary supplements, their benefits as well as their potential risks.

Audience Take Away:

- Expand knowledge on the status of dietary supplement use in different populations at risk
- Understand predictors of the supplementation behavior in these populations
- Assess the need to design and implement nutrition education programs on dietary supplements

Biography:

Dr. Dalia El Khoury received a BSc in Nutrition and Dietetics (2002) and an MSc in Nutrition (2005) at the American University of Beirut, Lebanon. She completed her PhD in Physiology and Physiopathology at the University of Pierre et Marie Curie, France (2008). Dr. El Khoury then served as a lecturer at the American University of Beirut (2009-2010), and as a postdoctoral fellow and sessional lecturer at the University of Toronto, Canada (2010-2014). Later, she joined a leading company in infant and child nutrition, Mead Johnson Nutrition, as senior scientist in Global Regulatory and Nutrition Science (2014-2016). Currently, Dr. El Khoury is an assistant professor in the department of Family Relations and Applied Nutrition at the University of Guelph, Canada.



Monika Modzelewska-Kapitula

Department of Meat Technology and Chemistry, Faculty of Food Sciences,
University of Warmia and Mazury in Olsztyn, Poland

Factors affecting quality of beef – from animal feeding to nutrition value of cooked meat

During the presentation factors affecting beef quality will be discussed, starting from cattle diet, followed by ageing period and thermal treatment used, and the results of our own research will be presented. In the past, beef was produced from pasture-fed cattle carcasses, whereas nowadays, grain finishing is more and more common among beef cattle producers. It has been shown that animal nutrition plays an important role in the regulation of biological processes taking place in muscles e.g., muscle protein turnover. A way the beef is produced affects the meat quality and significant differences have been reported between the quality of beef obtained from feedlots and pasture-fed beef. The quality of beef obtained from feedlot finished cattle might be improved by supplementing the diet with herbs. During the presentation, results of a study aimed to determine the influence of two herbal preparations added to cattle diet will be presented. The supplementation of the bulls' diet with two herbal preparations had a beneficial impact on technological properties and sensory tenderness of beef. The herbal extracts had no negative effect on lipid oxidation or the sensory attributes of beef. The technological operation, which is used to improve beef tenderness is ageing, and therefore the combined effect of ageing and diet supplementation on beef quality, including tenderness and other eating quality attributes was investigated. For meat producers it is profitable to reduce ageing time because with a longer ageing time, a higher cost must be borne. Significant changes in meat quality were noted in our study during, such as decrease in moisture and expressible water contents, Warner-Bratzler Shear Force and intensity of untypical taste and increase in colour parameters values and tenderness. It was also shown that using herbal preparations in a dietary treatment enabled to obtain 9-d aged beef with similar tenderness as compared with 14-d aged beef from control treatment. Another factor affecting meat quality, including its nutritional value is thermal treatment method. The effects of popular thermal processing method, sous vide and steam cooking, on minerals and fatty acid composition, Warner-Bratzler shear force (WBSF) and eating quality of beef will be presented. Our studies shown that thermal treatment method used for beef preparation affected mineral compound contents and fatty acid composition and that the consumption of steam-cooked beef is more beneficial from a mineral nutritional perspective than sous vide beef.

Audience Take Away:

- Issues and challenges in the production of high quality beef
- Analytical methods used in the evaluation of meat quality
- Evaluation of nutritional value of beef and fulfilment of requirements for minerals

Biography:

Dr. Monika Modzelewska-Kapitula studied Food Technology and Human Nutrition at University of Warmia and Mazury in Olsztyn, Poland, and received her PhD degree in 2006. She completed 6-months scholarship at Departamento de Tecnología de Alimentos, Nutrición y Bromatología, Facultad de Veterinaria, Universidad de Murcia, Murcia, Spain and 3-weeks didactic training at Department of Human Nutrition, Food and Animal Sciences, University of Hawaii at Manoa, Honolulu, USA. Now she is working at the position of Associate Professor at University of Warmia and Mazury in Olsztyn. She has published over 35 research articles in SCI(E) journals.



**Francesca Mariani^{1*}, Giulia Cappelli¹, Daniela Giovannini²,
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The effects of medicinal wild edible plants in human innate immunity vs intracellular bacterial pathogen

Bacterial resistance to antibiotics is an emerging threat. Pathogenic and opportunistic bacteria in nosocomial-acquired infections increasingly cause complications in the postoperative course. Medicinal Wild Edible Plants (MWEPs), growing in the Mediterranean basin, are known since ancient times for their healing properties and nowadays a growing number of people rediscovers them as natural remedies to common infections. We recently studied the antimicrobial properties of two MWEPs (*Lavandula angustifolia*, Lavender, and *Corylus avellana*, Hazelnut), to assess whether they are able to inhibit the bacterial growth by potentiating human innate immune response. For *L. angustifolia* the results showed that the cells treatment increases the phagocytic rate and stimulates the containment of intracellular *Staphylococcus aureus* replication by macrophages. Besides, this stimulation is coupled with expression of genes involved in reactive oxygen species production. The essential oil treatment balanced the inflammatory signalling induced by repressing the principal pro-inflammatory cytokines and their receptors and inducing the heme oxygenase-1 gene transcription. For *C. avellana* our results suggest that the effect of the hydro-alcoholic extract on macrophage immune response against *S. aureus* infection is influenced by the intracellular inflammatory status of the donor. In both the studies we found that MWEPs extracts in *S. aureus* infected-human macrophages exerted a biphasic effect, either potentiating or worsening the bacterial containment. We like to favour the hypotheses that this is the result of the interaction between the dose of the phytochemical stressor administered and the intracellular milieu inflammatory status.

Audience Take Away:

- They will listen the description of antimicrobial properties of Medicinal Wild Edible Plants of the Mediterranean basin, which are mostly mediated by the stimulation of the human innate immune system. This could prompt them to extend their studies on Wild Edible plants also in this direction
- This type of experiments might provide an additional tool to face the problem of Antibiotic Resistance of nosocomial-associated bacterial infections

Biography:

Dr. Mariani studied Biology at the Sapienza Rome University, Italy, and graduated in 1990. She then joined the research group of Prof. Colizzi at Biology Dept. Tor Vergata University, Rome, Italy. She received her PhD degree in 1993 at the same institution. She then moved in 1994 for a two years postdoctoral fellowship supervised by Dr De Libero at the Department of Research, Experimental Immunology Lab. University Hospital, Switzerland. She obtained the position of an Scientist at the Institute of Experimental Medicine, National Research Council, Rome, Italy, in 1996. She has published more than 40 research articles in SCI(E) journals.



Gauri Jairath^{1*}, Gorakh Mal¹, A.K. Verma², Daisy Rani³, Devi Gopinath¹, Rinku Sharma¹ and Birbal Singh¹

¹ICAR-Indian Veterinary Research Institute, Regional Station, Palampur-176061, Himachal Pradesh, India

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Utilization of apple pomace and spent mushroom compost as animal feed: A step forward to livestock and environmental sustainability

Apple pomace and spent mushroom compost, the byproducts/leftover of apple juice industry and mushroom industry, respectively, are generated in tonnes every year. Despite of their nutritional benefits, a very little percentage is utilized for animal feeding and rest is either dumped road side or landfills. Besides, underutilization of these nutritious agro-wastes, their direct release in the environment puts a great load on different elements of ecology in terms of high chemical oxygen demand. A scientific utilization of these agro-wastes individually or in combination may be employed for economic animal feeding. Where, apple pomace is a rich repository of water-soluble carbohydrates (10.30 ± 0.07 gm/100gm DM), but low in crude protein (5.89 ± 0.16 % of DM) and dry matter (14.73 ± 0.08 %), the spent mushroom compost is rich in protein (12.75 ± 0.12 %) and has enzymes such as cellulase and xylanase to bio-fortify the wheat straw. In addition, apple pomace is rich in polyphenols and dietary fiber. Thus, a combination of apple pomace, spent mushroom compost in a specific way may not only provide an economic feed/feed ingredient substitute, but will also address the current situation of decreasing pasture lands and fodder availability to livestock and environmental load.

Talk will cover following:

- Current scenario of agro-wastes and their sources and nutritional aspects
- Current scenario of availability of animal feed and fodder and livestock sector
- Current methods of disposal and impact on environment sustainability
- Detailed aspects of apple pomace and spent mushroom compost
- How apple pomace and spent mushroom compost can be utilized for animal feeding?
- Challenges during utilization
- Role in livestock economic rearing and sustainability

Audience Take Away:

- Importance of agro-wastes and their nutritional aspects.
- Techniques to process agro-waste and how value addition of later can be done.
- Help the animal nutritionist all over the world to develop the agro-waste based animal feed
- It would draw the attention of audience towards the methods of choosing agro-wastes for animal feed.

Biography:

Dr. Gauri Jairath pursued B.V.Sc. & A.H. (Gold medallist) from CSKHPKV, Palampur, India; M.V.Sc. from GADVASU, Ludhiana, India; and Ph.D from LUVAS, Hisar, India in Department of Livestock Products Technology. She joined Agriculture research services in 2016 and is posted as a scientist at ICAR-Indian Veterinary Research Institute, Regional Station, Palampur (H.P.). She has expertise in nutritional interventions for enhancing meat quality and value addition. She was awarded with DST INSPIRE fellowship for pursuing Ph.D., and two times with Young Scientist Award by The Indian Society for Sheep and Goat Production and Utilization and Indian Association of Women Veterinarian in 2017. She has authored many research papers (more than 20), review articles (more than 10), popular articles (20) and book chapters (8) in national and international journals and reputed magazines. She is an editorial board member of Journal of Veterinary and Marine Sciences.



Shraddha Deo^{1*}, Rohit Saroj²

¹CEO-SNEH Foundation, India

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Combating Malnutrition through therapeutic/awareness interventions to address acute malnutrition in urban slums of PCMC, Maharashtra. (CoMal)

Malnutrition has persistently remained a pressing issue for children between the ages of 0-6 yrs in India calling for a better understanding of the reasons ranging from socioeconomic and financial to awareness based or strictly related to medical conditions. There is a strong correlation between pediatric malnutrition and level of education in the mothers. While awareness building campaigns help to improve the future of the children, a total assessment of the health of the child is imperative to design a treatment plan. In order to develop an understanding of the paradigms of how malnutrition presented in pediatric subjects, a survey was conducted, followed by individual assessment, counseling and treatment of the participants. 1864 Children were screened for malnutrition based on overall fitness and Middle-Upper Arm Circumference (MUAC) in the age group of 6-59 months and hence were categorized into two major groups of Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM). A program called CMAM (Community-Based Management of Acute Malnutrition) was used for screening, selection, classification, treatment and management of the participants. Subjects categorized under SAM were given life saving treatment in the form of Ready-to-use Therapeutic Food (RUTF) and those under MAM were Ready-to-use Supplementary Food (RUSF) for 8 weeks. MAM subjects were also given supplemental therapy of multivitamins, Iron and Calcium. All children under the scope received deworming and Antibiotic therapy. Anthropometry was performed weekly for SAM and bi-weekly for MAM subjects to monitor the progress. Post 8 weeks a reclassification of the subjects was done based on anthropometry results to deduce whether the subjects had moved from SAM to MAM status or had moved to a healthy zone. Those which had moved to the healthy zone were given specially formulated sustainability plans. From the inception of the project, over the course of 7 years an average of 29.60% (SAM) and 70.36% (MAM) cases were recorded. During this period a steady decrease in SAM cases was observed with a simultaneous increase in MAM cases. At the time of conclusion of this project an average of 1.14% (SAM) and 7.90 % (MAM) cases were recorded and 97% of the subjects had moved to the healthy zone and had sustained for a 12 month cycle.



Ali Imran*, Muhammad Umair Arshad

Department of Food sciences, Government college University, Faisalabad, Pakistan

Application of eco-innovative technologies for the extraction of bioactive polyphenols from peanut shell and husk for therapeutic application

Agro-industrial food waste represent the huge problem owing to its volume, impact on climate and perishability. The dilemma has triggers the researchers and scientist for discovering some innovative processes and technologies not only for its management but also for the isolation/extraction of ingredients that provide benefits for human health. Among the different Sustainable Development Goals (SDGs), ensuring food security through reducing the food wastes and losses at the end of 2030 is among the priority list because the 12.5% of the global population is estimated to be suffering from chronic hunger. Amongst, the different coping strategies, utilization of food waste for obtaining proteins and phytochemicals is the most viable process that ultimately proved effectual to mitigate the malnutrition and ever escalating disease burden. The utilization of food waste into value added products will also be helpful to boast economy of Pakistan owing to its capacity to create jobs and progress of industry because these food wastes have been recognized as an abundant and cheap source of valuable functional compounds. The prime mandate of recent investigation is utilization of Agro industrial waste for the extraction/isolation of bioactive polyphenols through Eco-friendly technologies to cater the SDS goal, ensure food security and climate preservation. Purposely, the raw material from peanut by products were gathered and isolate/extract through different eco-innovative technologies and structural elucidation. Afterwards, the ultrasonication, supercritical fluid extraction and conventional extraction method were applied for the extraction of polyphenols by adapting different variables. The results indicated higher yield of polyphenols showed better HPLC characterization through innovative technologies as compared to conventional solvent extraction. Furthermore, the developed designer products exhibited the good storage and consumer acceptability

Audience Take Away:

- The audience may learn about the efficient utilization of Agro industrial waste
- Audience related to food processing industry may be benefited for the innovative products developments
- The therapeutic and innovative product development may in process

Biography:

Dr. Ali Imran is currently working as assistant Professor in the Institute of Home and Food Science from more then 6yrs. He has expertise in formulation of plant based nutraceutical based dietary intervention against oxidative stress mediated maladies both in animal and human models. He has more then 50 high impacted publication in reputed food science and nutrition journals. He also won many Competitive research grants relevant to his expertise. Currently, he is working on the role of plant based nutraceuticals in brain health on animal models. He also wrote more then 10 book chapters on health endorsing perspective of polyphenols.

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Effect of powder and protein extract of cricket (*Gryllus bimaculatus*) on myostatin expression in C2C12 cells

Background: Sarcopenia is age-related loss of muscle mass and function. Myostatin is the negative regulator of muscle mass and is the marker of muscle loss, and it is important in sarcopenia. Adequate nutritional intake in the elderly population has been emphasized to prevent sarcopenia. Edible insects are rich in nutrients, such as proteins, fats, minerals, and vitamins but little research has been done on their beneficial effects in ameliorating sarcopenia. Purpose: The purpose of this study was to investigate the effect of cricket (*Gryllus bimaculatus*) powder extract (CPE) and protein powder extract (CPPE) on myostatin (MSTN) gene expression in C2C12 cells.

Methods: C2C12 cells were treated with CPE and CPPE at ~0.01-1.0mg/mL of CPE or CPPE for 24 h, and then the cell viability was determined by MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium] assay; the myostatin(MSTN) mRNA expression levels were also measured in the CPE and CPPE treated C2C12 cells. The transcriptional regulation of the MSTN promoter was determined using the luciferase reporter assay.

Results: Cytotoxicity was not observed when the C2C12 cells were treated with CPE or CPPE in the concentration range of ~0.1-1.0 mg/mL. Treatment of C2C12 cells with CPE and CPPE at 10 µg/mL each for 24h decreased MSTN expression by 77% and 44% (p<0.05), respectively. Moreover, CPE and CPPE treatments suppressed MSTN promoter in the C2C12 cells by 35.9% and 13.6% (p<0.05), respectively.

Conclusion: Both CPE and CPPE can decrease myostatin expression in C2C12 cells; and thus can suppress sarcopenia, and CPE may be more effective than CPPE.

Audience Take Away:

- Reassessment of nutritional value of edible insects
- Improving awareness of edible insects
- Applied to the prevention of sarcopenia
- Applied in edible insect research(development of insect food)D
- Does this provide a practical solution to a problem that could simplify or make a designer's job more efficient?
- Will it improve the accuracy of a design, or provide new information to assist in a design problem? List all other benefits

Biography:

Jung Soon Han received MS and PhD degree in Korea University. And worked biochemistry of college of medicine of Korea University. After two year postdoctoral fellowship at the Physiology Laboratory of Health Science center of San Antonio in Texas, USA and now Research Professor at the Korea University.



Pavlina Koseckova^{1*}, Ondrej Zverina¹, Marie Pechova¹, Marie Borkovcova²

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Mineral profile of edible insect species popular in Czechia

Entomophagy is proclaimed as an efficient nutritional strategy due to the high contents of proteins and minerals in edible insects. In particular, it is seen as an efficient strategy for increasing the dietary intake of nutrients that are frequently deficient. The objectives of this work were to determine the contents of fourteen minerals in four insect species namely, house cricket (*Acheta domestica*), yellow mealworm beetle (*Tenebrio molitor*), desert locust (*Schistocerca gregaria*), and super mealworm (*Zophobas morio*) and to assess these insect species as sources of minerals with respect to the dietary recommended values (DRV) for such minerals. Elements of high nutritional importance, such as iron (Fe), zinc (Zn), and calcium (Ca), and those presenting potential risks with respect to toxicity, such as cadmium (Cd), and lead (Pb), were the main focus of this study. Samples were analyzed by means of high-resolution continuum source graphite furnace atomic absorption spectrometry (HR-CS GF-AAS), and flame atomic absorption/emission spectrometry (F-AAS/AES). According to our results, the consumption of a single portion (100 g) of some insect species would provide more than the DRV for zinc (Zn), copper (Cu), and phosphorus (P); about 63–82 % of the DRV for Fe; and only about 16–23 % of the DRV for calcium (Ca). The high contents of P found in some species also result in low Ca to P ratios for those insects, which may significantly affect Ca absorption. Finally, the low cadmium (Cd) and lead (Pb) contents obtained in this work indicate that the consumption of the given insect species presents little if no risk.

Audience Take Away:

- Edible insects do not offer only gastronomic experience, but also a nutrient richness
- Edible insects may be an efficient strategy for increasing the dietary intake of nutrients that are frequently deficient
- Iron contents in samples did not differ between insect species
- 100-g of a portion of dried some insect species can provide the dietary recommended values (DRV) for zinc, copper, and phosphorus
- Cadmium and lead contents in insect species were assessed as safe

Biography:

Pavlna Kosečková is a registered dietitian with specialization for child and adult nutrition, a graduate of the master's program Dietitian with specialization, and the bachelor's program Dietitian at the Faculty of Medicine of Masaryk University in Brno. She should receive a PhD degree from Hygiene, preventive medicine, and epidemiology in 2021 at the same institution. Within her postgraduate programme she has dealt with the topic of nutritional toxicology in an association with alternative eating. As a dietitian, she has worked since 2017, she specializes in preventive nutrition, obesity, and eating disorders.



Tatiana M. Giro^{a*}, Andrey V. Kulikovskii^b, Svetlana V. Andreeva^a

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Production and storage of lamb enriched with essential trace elements in biodegradable film

The studies are aimed to the development of technology for production of lamb enriched with minerals in organic form, packed in biodegradable film, providing the preservation of essential nutrients and quality as well as reduction in the loss of raw material weight. One of the ways for production of lamb enriched with trace elements in organic form is in-vivo-optimization of diets with essential nutrients. The main advantage of in-vivo-enrichment of lamb is elimination of the risk of a negative effect (overdose), since the introduction of the additive is already “approved” by animals. The experiment was conducted on the base of production-training farm “Experimental Animal Husbandry” at Saratov State Vavilov Agrarian University. For experiment four groups of experimental animals were formed in a flock by the method of analogues. There were 10 heads of four-month-old lambs of Edilbay breed in each group. Feed additives were introduced in addition to the main diet, according to the product instructions, once a day combined with the mixed feed. Dose assignment of “Yoddar-Zn” was 100 g per 1 ton of the mixed feed; assignment of “DAFS-25” was at the rate of 1.6 mg per 1 kg of the mixed feed as part of premixes. The control group received only mixed feed in the amount of 250-300 g per head per day in addition to the main diet; experimental group I – mixed feed + feed additive “Yoddar-Zn”; experimental group II – mixed feed + organic selenium preparation “DAFS-25”; experimental group III – mixed feed + “Yoddar-Zn” + “DAFS-25”. Within the studies it has been found that the use of selenium and iodine-containing feed additives (“Yoddar-Zn” and “DAFS-25”) in the diets of small cattle stimulates their development, increases resistance and productivity, allows obtaining lamb enriched with organic forms of zinc, selenium and iodine, which is of important medical and social importance for the prevention of dysmicroelementosis of the population. It is proved that the hematological parameters of animals raised with the use of enriched diets were within the limits of physiological norms. It was noted that the hemoglobin content in the blood was higher in the ram-lambs of experimental groups ($P>0.99$). The total protein concentration in the same period was slightly lower, and this is probably due to more intensive processes of protein metabolism and better growth energy. The significant differences in erythrocyte content in the blood between the groups have not been established. The ram-lambs of the experimental groups have a higher phagocytic number: by 5.1 ($P>0.95$) in the experimental group I, and by 9.4 and 14.5% in the experimental groups II and III ($P>0.95$), ($P>0.99$), respectively; as well as a significant superiority in phagocytic activity and phagocytic intensity of animals of the experimental groups II and III. This indicates their higher resistance to adverse environmental factors in comparison with the animals of the control group. The form of organic iodine was reliably identified and its amount in the form of iodotyrosine was controlled. It is confirmed that due to its covalently bound form, organic iodine is able to manifest diverse biological properties, including through iodine-containing hormones – thyroxine and triiodothyronine, involved in the regulation of all metabolic processes in the human body. Monitoring of the trace elements content showed that the content of zinc, iodine and selenium in lamb is directly dependent on the amount in the diet, and more significant localization of them was recorded in the meat of ram-lambs of the experimental group III. The use of a film-forming coating on the base of sodium alginate reduces the mass loss of raw materials (by reducing the rate of moisture evaporation), creates a certain barrier to the penetration of oxygen and other substances from the outside, in addition, does not pollute the environment. The developed film coating on the base of sodium alginate has a homogeneous structure, has structural resistance and a barrier effect against the action of air oxygen and microorganisms. Biodegradable film does not lose its structure-forming properties after cold

treatment and there is no need to remove it before use. An important advantage of biodegradable film is environmental safety and low cost. Biodegradable films on the base of sodium alginate are safe for humans due to their natural origin. Sodium alginate is not only a biodegradable biopolymer, which will solve the problem of packaging recycling, obtaining an environmentally friendly biodegradable food film coating with a longer shelf life of products and at the same time preserving its quality, but also edible, i.e. there is no need to remove the coating from the products, on the contrary, its use in food helps to cleanse the body removing heavy metals and radio-nuclides. The use of food coating on the base of sodium alginate for storage of chilled lamb contributes to improving the environmental situation, increasing the shelf life of raw materials and enhancing its quality. The research was carried out on a basis of the grant of the Russian Scientific Foundation **19-76-10013 “Development and introduction of technology for production and storage of environmentally safe lamb enriched with essential trace elements».**

Audience Take Away:

The work is devoted to the solution of the fundamental problem-the development of technology of environmentally safe biofortified lamb enriched with essential trace elements in organic form, Packed in a biocorregulated film coating. Identified form of organic iodine and is controlled by the amount in the form of iteration. It is due to its covalently bound form, organic iodine is able to exhibit a variety of biological properties, including through iodine-containing hormones-thyroxine and triiodothyronine, involved in the regulation of all metabolic processes in the human body. The use of a film-forming coating based on sodium alginate protects the raw material from mass loss (by reducing the rate of evaporation of moisture, creates a barrier to the penetration of oxygen and other substances from the outside, does not pollute the environment.

Biography:

Giro Tatiana took her post-graduate and doctoral courses at the FGBNU V.M. Gorbатов All Russian Meat Research Institute (VNIIMP) (Moscow). In 2006 she received the degree of Doctor of technical sciences, in 2009 - the academic status of Professor. Under her supervision 8 Candidate's dissertations were defended. She has published more than 400 articles in scientific journals. She presented papers at international congresses: in Serbia (Belgrade) 2007, China (Beijing) 2007, South Africa (Cape Town) 2008, South Korea (Seoul) 2010, Canada (Montreal) 2012. She was a member of the jury of The International Specialized Exhibition of the Meat Industry IFFA – Internationale Fleisch Fach Ausstellung (Germany, Frankfurt on the Main). Innovative projects presented at the IFFA were awarded four gold medals. She headed a team of University students at the international competition “TROPFELIA Europe” (France, Paris, Germany, Cologne), worked as a member of the jury of the same competition.



Mariela Beatriz Maldonado

Ciudad de Mendoza, Argentina and CONICE, Argentina

Dehydrated cherries osmotically with lactitol

Trials of canned cherries in syrup with lactitol were made with different ratios of lactitol: 25 and 50% with an improved nutritional profile. Three formulations of cherries were developed: Witness: sucrose 100%, T1: sucrose75%-lactitol 25% and T2: sucrose50%-lactitol 50%. In comparison, the Witness: sucrose 100% decreased the moisture until 23%, T1: sucrose75%-lactitol 25% to 35% and T2:50% sucrose-50% lactitol to 41%. All treatments reached 55°Brix. The increase in soluble solids was adjusted with a third-order polynomial evaluation with a high level of adjustment. Sensorial tests were made: preference and acceptance. It showed the formulation T2:50% sucrose-50% lactitol, was the most preferred, then the T1: sucrose75%-lactitol 25%. The Witness: 100% sucrose was the least chosen. The study shows that it is feasible to produce cherries with up to 25 % reduction in caloric value as the case of T2:50% sucrose-50 % lactitol and 13% reduction in caloric value with the formulation T1: sucrose75%-lactitol 25%.

Biography:

Dra. Maldonado studied Biological Sciences. She received her doctoral thesis with honors in 2004 at the Universidad Nacional de Cuyo, Mendoza, Argentina. She is Specialist in Quality Engineering. She received a lot of awards: GOLD PLATE AND HONOR DIPLOMA for National University of Cuyo, Honorary mention, Federation of University Women Argentina Merit for the Best graduate and Honorary member the Centro de Bromatólogos Mendoza. And She won 3rd MENTION in VI Food Congress XXI Conference Food, Nutrition and Health XXXIX for this work: "Use of low digestibility carbohydrates as sucrose substitutes in the production of preserved cherries" She has written a lot of papers in international magazines and Congress.



Gordana Kralik^{1,2*}, Zlata Kralik^{2,3}, Danica Hanzek^{2,3}

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Dietary modification of yolk fatty acid profile with vegetable and fish oil

The biological significance of polyunsaturated fatty acids, in particular the n-3 PUFA, as well as the n-6/n-3 PUFA ratio, is the subject of numerous studies. For the human body, linoleic (LA, C 18:2) and linolenic (ALA, C 18:3) acids are essential as precursors of bioactive fatty acids n-6 PUFA and n-3 PUFA. The fatty acid profile in egg yolks can be altered by modifying the laying hens' feed composition. In order to incorporate n-3 PUFA into eggs, the following two factors are significant: the transfer of utilized n-3 polyunsaturated fatty acids from feed into eggs and the endogenous metabolism of n-3 PUFA in the laying hens' bodies. The paper presents the results of research on the use of flaxseed (LO) and rapeseed oil (RO) in combination with fish oil (FO) in the feeding of laying hens and the effect on the fatty acid profile of egg yolks (Σ n-3 PUFA and n-6/n-3 PUFA ratio). Nutritional treatments were as follows: C=control (5% soybean oil SO), E1=1.5% LO+3.5% FO, E2=3.5% LO+1.5% FO, E3=1.5% RO+3.5% FO, E4=3.5% RO+1.5% FO. Feed mixtures for laying hens were balanced on the basis of 17% crude protein and 11.5 MJ/kg ME, and the n-6/n-3 PUFA ratio in the mixtures was as follows: C 13.10; E1 2.69; E2 1.53; E3 4.78 and E4 6.21. The combination of flaxseed oil and fish oil in the feed affected the n-6/n-3 PUFA ratio making it narrower compared to the combination of rapeseed oil and fish oil. Control feed C contained only ALA, 4.08% being without EPA and DHA fatty acids. The analysis of the fatty acid profiles in egg yolks showed that the eggs contained 1.26% of DHA in addition to ALA, which means that, although in small amounts, DHA was synthesized and deposited in eggs by the laying hens. The following proportions of n-3 PUFAs were found in the eggs of the experimental groups: E1 6.51%, E2 8.30%, E3 5.17% and E4 3.54%. The n-6/n-3 PUFA ratio in egg yolks decreased from 11.85 (control group) to 3.08 and 2.57, respectively, for flaxseed and fish oil treatments and 4.25 and 6.38 for rapeseed and fish oil treatment. Studies have shown a more efficient deposition of n-3 PUFAs in the yolks of the E1 and E2 groups, although ALA was most abundantly present in the total n-3 PUFAs.

Audience Take Away:

- This work is the result of several years of researching the enrichment of eggs with functional ingredients
- Results can be used in poultry practice
- The results of our and clinical trials may provide new information in the prevention of human health

Biography:

Gordana Kralik obtained PhD (in Food Chemistry and Technology) in 1976 at Faculty of Food Technology Zagreb and another PhD in 1985 in Agronomy from the Faculty of Agriculture in Osijek. She started her scientific career at the Faculty of Agriculture in Osijek, being appointed young researcher in 1968, scientific assistant in 1974, assistant professor in 1977, associate professor in 1980 and full professor in 1987. The Senate of University of Osijek promoted Gordana Kralik to full professor in tenure in 1997 and awarded the honorary scientific - teaching title professor emeritus in 2013. She published more than 417 scientific papers.



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Assessment of diet and nutritional status of a patient with hypothyroidism, Hashimoto's and dyslipidemia - a clinical case study

The study aimed to evaluate the diet and nutritional status of the patient with hypothyroidism with Hashimoto and dyslipidemia, taking into account the results of the annual collaboration between the dietician and the patient. The paper presents dietary recommendations and a weekly dietary project, applied by the patient during the year. The patient's diet was evaluated, before the introduction of a new diet, based on a survey and a weekly dietary log (current record), based on the balance of nutrients. The nutritional status of the patient was monitored based on anthropometric measurements and body composition analysis and selected biochemical parameters of blood were compared and evaluated. So far, the patient has consumed little fiber, Ω -3 acids, iron, selenium, iodine, vitamin D and C, while excessive consumption of energy, protein, fat, saturated fatty acids, carbohydrates, vitamin A and cholesterol. During the study, a decrease in TSH hormone concentration, body weight by 7.4 kg and percentage of fat tissue to the tolerance limits was noted. An increase in cardioprotective HDL cholesterol concentration was noted. The obtained results are the result of the pharmacotherapy, diet therapy and physical effort applied by the patient. The individual, holistic approach to problems and the appropriate methods used to eliminate them have improved the patient's health.

Audience Take Away:

- What are the most common dietary mistakes for women with thyroid disease
- Which nutritional deficiencies are most common in patients with thyroid problems
- What dietary management to introduce in patients
- Which supplementation to introduce in patients
- How diet can improve the health of patients with thyroid disease

Biography:

Joanna Mrozek, MSc, Dietitian, PhD. student of Food Technology and Human Nutrition. Graduate of Dietetics, Faculty of Food Technology, the University of Agriculture in Krakow. Currently, she is continuing her education at the same university. She researches on entitled „Evaluation of the nutritive value of vegetables biofortified with iodine and their health-promoting properties - in vivo studies on animal model”. In addition, she works actively as a dietician in a clinic dietary



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Artichoke leaf extract as AKR1B1 inhibitor

Artichokes as an important part of mediterranean diet have positive impact on human health. Traditional applications of *C. cardunculus* consider the usage of the blanched leaves, fleshy leaf petioles and the receptacle in soups, stews and salads. Cardoon is traditionally used as a diuretic, choleric, cardiogenic and an antihemorrhoidal agent. Cardoon leaves are used for their cholagogue, choleric and choleretic actions, for treatment of dyspepsia and as antidiabetics. Aldose reductase inhibitors are considered to be potential therapeutical agents for the chronic diabetic complications. The AKR1B1-catalyzed reduction of aldehydes is part of the intracellular inflammatory pathway leading to the activation of NF- κ B and the expression of pro-inflammatory genes. Herbal extracts or their constituents are promising agents potentially alleviating these complications. The present study is aimed at determining the inhibition of AKR1B1 by an extract of artichoke leaves and the effects of this extract and three participating compounds on the expression of AKR1B1, COX-2, and MMP-2 proteins in THP-1 cells after incubation with LPS. Extract of *Cynara cardunculus* leaves is rich in phenolics. Total amount of phenolic compounds of artichoke leaf extract was 7.85%. Human and rat lenses aldose reductase were inhibited in non-toxic low concentrations. $IC_{50} = 5.12$ g/mL and 3.059 g/mL respectively. After stimulation by LPS, the extract attenuated the activity of NF- κ B in THP-1 cells, but no changes in the expression of AKR1B1 were recorded. The extract diminished the expression of the inflammation-related enzymes COX-2 and MMP-2, probably by inhibiting the activity of NF- κ B. The artichoke leaf extract represents a prospective preventive agent of development of chronic diabetic complications, probably due to phenols content. Acknowledgment: This work was supported by the Grant Agency of Ministry of Education, Science, Research, and Sport of the Slovak (grant no. VEGA-1/0359/18).

Audience Take Away:

- The prevalence of type 2 diabetes is rising fastest among developing countries but rising incidence is in Europe also, Slovak Republic including
- Herbal extracts or their constituents are promising agents potentially alleviating these complications. Hence, there is a pressing need for the scientific characterisation of the numerous anti-diabetic medicinal plants described in traditional ethnomedical systems worldwide
- There is an opportunity for cooperation between faculties and research groups in different fields. activity guided separation of secondary metabolites from the plants, activity evaluation, development of method for a quantitative determination of secondary metabolites in extracts, standardization of extracts etc.

Biography:

Dr. Mucaji studied Pharmacy at the Comenius University in Bratislava, Slovakia and graduated as MS in 1993. He received his PhD degree in Pharmacognosy in 1997 at the same institution. In 2004 he obtained the position of an Associate Professor at the Faculty of Pharmacy, Comenius University and in 2013 position of Professor. He has published more than 60 research articles in SCI(E) journals with around 700 citations. His field of interest is Pharmacognosy, separation and identification of natural compounds, extracts standardization and evaluation of biological activity of natural compounds.

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