

15<sup>th</sup> World Congress on

# Advances in Nutrition, Food Science & Technology

September 11-12, 2017 Edinburgh, Scotland

## Scientific Tracks & Abstracts Day 1

Nutrition World 2017



**Food and Nutrition | Nutritional Science  
Nutrition and Health | Public Health  
Nutrition | Human Nutrition | Nutrition in  
Pregnancy and Lactation | Nutrition and  
Oncology**

**Session Chair**  
**Nancy D Turner**  
*Texas A&M University, USA*

**Session Co-chair**  
**Peter F Surai**  
*Feed-Food Ltd, UK*

**Session Introduction**

- Title: Low-calorie diet and exercise in management of obesity, affect the overall health condition: A Successful Story**  
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- Title: Carbohydrates counting as a medical nutrition therapy for diabetes mellitus**  
M B Agieb, Saudi German Hospital, KSA
- Title: The relationship between glucose and lipid metabolism parameters and carcass characteristics in finishing cattle**  
Benjamin M Bohrer, University of Guelph, Canada
- Title: Nutrition and stress prevention programs in livestock/animal production: From vitamins to vitagenes**  
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- Title: Design and production of food processing machine using under water shock wave for practical application**  
Ken Shimojima, National Institute of Technology, Okinawa College, Japan
- Title: A consideration of underwater shock wave behaviour at interface for various acoustic impedance materials using the computational prediction**  
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- Title: Sourdough bread obtained from a dough fortified with anthocyanin-rich flour from the purple potato cv. Vitelotte as nutraceutical sources: Its quality attributes**  
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- Title: Comparative evaluation of the therapeutic effect of metformin monotherapy with metformin and acupuncture combined therapy on weight loss and insulin sensitivity in diabetic patients**  
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- Title: Immunomodulating effects of the  $\beta$ -glucan from *Pleurotus cornucopiae* mushroom on macrophage actions**  
Ken-ichiro Minato, Meijo University, Japan
- Title: Comparison of gut microbiota in hens of the crosses Hisex Brown and Lohmann Brown**  
Michael N Romanov, University of Kent, UK & Moscow State Academy of Veterinary Medicine and Biotechnology, Russia
- Title: Analysis of nutrient management program at the health centers in Region District Health Bireuen, Aceh, Indonesia Year 2011**  
Mainora, Bireuen District Health Office, Indonesia

## **Low-calorie diet and exercise in management of obesity, affect the overall health condition: A successful story**

**Suhair Abdalla Khalil Abdalla**

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The rising prevalence of obesity and its associated morbidity and mortality are placing significant strain on Saudi's health-care system. The present case study examines the weight loss attempts of a 53-year-old male patient weighing 200 kg (body mass index 57.3 kg/m<sup>2</sup>) in the setting of an acute hospital outpatient clinic. The patient is known case of morbid obesity, DM, Hypertension (HTN) on medications, gout, secondary infertility, and sleep apnea on C pap. The patient was referred to nutrition clinic for his weight control, as case of secondary infertility and uncontrolled diabetes, hypertension beside other health problems related to his obesity. Because of the need for rapid weight reduction, a novel inpatient approach to weight loss was adopted, using low-calorie diet (LCD) and regular exercise (45-60 minutes daily). The LCD intervention was prescribed in conjunction with medical management, regular physical activity, and dietary counseling. Serial anthropometric and biochemical measurements were obtained throughout the treatment

period. The patient achieved a 90-kg weight loss (45% initial body weight) over a ten-month of follow up. Improvements in obesity-related co morbidities and the patient's overall health condition were also observed during his follow up. Total weight loss at 10 months of follow up 90 kg (45% initial body weight), improved in Hba1c to normal reference range and stopped oral hypoglycemic (OHG), Controlled HTN pt back to normal Blood Pressure reading and stopped medication, sleep apnea management and no C. pap use. His wife gets pregnancy after weight loss occurred (pt secondary infertility and weight loss help in its management) Pregnancy occurred. The use of LCD with exercise in a motivated individual in a controlled hospital outpatient clinic, along with input from the multidisciplinary team, resulted in substantial and sustained weight loss with improved health outcomes. In conclusion obesity is preventable and treatable. LCD and physical exercise can produce weight loss that can be maintained and help in improving the overall health of obese patient.

### **Biography**

Suhair Abdalla Khalil Abdallah has completed her PhD in Clinical Nutrition from Ahfad University for Women, Sudan. She is a Clinical Dietitian at King Faisal Specialist Hospital & Research Center, Kingdom of Saudi Arabia. She has experience of 18 years in clinical nutrition field.

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 Notes:

## **Carbohydrates counting as a medical nutrition therapy for diabetes mellitus**

**M B Agieb**  
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**C**arbohydrates have the greatest effect on blood-sugar levels when digested. Around 90-100% of the carbohydrate converts to sugar (glucose) within 15 minutes to 1.5 hours. Comparing with only 58% of protein and less than 10% of fat, are converted into sugar within several hours after consumption. Counting carbohydrates is a meal plan that involves matching your insulin dose to the amount of carbohydrates. Conversion of insulin to carbohydrate ratio is a guide for determining how much insulin needed as a bolus dose to help the body process the amount of carbohydrate consuming in a meal. The magic number is 15 for counting carbohydrates (15

grams of CHO = one carbohydrate choice or serving). As an initiation for this method an average might be, 1 unit of insulin for every 10 or 15 grams of CHO for an adult or 1 unit for every 20 to 30 grams for a school-age child, depending on the calculation method used and it will be adjusted as food intake recorded and matching with blood sugar monitoring. Infants and toddlers need individualized determinations by the diabetes care team. Fiber and alcoholic sugar have special consideration in this method because both of them had an effect on blood sugar absorption which affect blood sugar levels.

### **Biography**

M B Agieb got her PhD in Human Nutrition from Ahfad University for Women in Sudan 2009. She joined the Saudi-German Hospital Group as a Head of the Dietetic Department in 2001. She has taught several courses on Food and Nutrition at Batterjee Medical College. Her current concern and interests include nutrition therapy for obesity and diabetes in both adults and adolescents.

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 Notes:

## The relationship between glucose and lipid metabolism parameters and carcass characteristics in finishing cattle

Benjamin M Bohrer<sup>1</sup>, Dustin D Boler<sup>2</sup> and Anna C Dilger<sup>2</sup>

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<sup>2</sup>University of Illinois, USA

**B**lood parameters in finishing cattle, such as glucose, insulin, non-esterified fatty acids (NEFA), and beta-hydroxybutyrate (BHBA) can be used for several applications in ruminants. It has been widely speculated that differences in insulin sensitivity and free fatty acid circulation of finishing cattle may impact important carcass traits in beef, such as marbling and fat thickness. The objective of this research was to measure glucose and metabolism parameters in late-stage finishing cattle and establish the relationship of those parameters with carcass characteristics. Late-stage finishing steers (N=23; average initial BW=618±25 kg) and heifers (N=12; average initial BW=573±26 kg) were fed high-concentrate diets for a 56-d period. During this study period, non-fasted blood samples were collected at d-0, d-28, and d-56 and glucose-tolerance tests were conducted at d-21 and d-49 of the study period. Glucose-tolerance tests consisted of infusing cattle with 0.5 mL of 50% glucose solution/kg of BW after a period of 16-24 hours without feed and collecting blood for multiple time increments after the infusion. Cattle

were slaughtered in a commercial facility on d-57 of the study period and carcass characteristics were measured 48-h after slaughter. Pearson correlation coefficients were calculated for all parameters using the CORR procedure of SAS. Marbling was not correlated ( $r \leq |0.25|$ ;  $P \geq 0.16$ ) with glucose tolerance test parameters, including not being correlated ( $r \leq |0.20|$ ;  $P \geq 0.27$ ) with d-56 glucose, insulin, NEFA, and BHBA. Fat thickness measured at the 12th rib location was not correlated ( $r \leq |0.30|$ ;  $P \geq 0.09$ ) with glucose tolerance test parameters, including not being correlated ( $r \leq |0.19|$ ;  $P \geq 0.27$ ) with d-56 glucose, insulin, NEFA and BHBA. Overall, glucose and lipid metabolism parameters and carcass characteristics were mostly uncorrelated in this group of late-stage finishing cattle.

### Biography

Benjamin M Bohrer is a Meat Scientist with training and expertise in Animal and Food Sciences. He completed his graduate education in Animal Sciences at the University of Illinois with a focus on meat science and muscle biology and began his career as an Assistant Professor in Food Sciences at the University of Guelph. Much of his previous research has been completed on the impacts of on-farm production practices on muscle development, carcass characteristics, fresh meat quality and processed products of pork, beef, and poultry. In the future, his research program at the University of Guelph will expand on livestock production factors affecting meat and muscle biology. In addition, a great focus will be placed on whole muscle and processed meats, with specific focus on the health of these products and innovative ways to improve quality and value of meat products.

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 Notes:

## Nutrition and stress prevention programs in livestock/animal production: From vitamins to vitagenes

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Commercial livestock/animal production is associated with four major types of stresses, including environmental, technological, nutritional and internal stresses, affecting productive and reproductive performance of animals and their health status. It has been suggested that at the molecular level most stresses are associated with overproduction of free radicals and oxidative stress. Therefore, the development of the effective antioxidant solutions to decrease negative consequences of commercially-relevant stresses is an important task for animal/poultry scientists. One of such approaches is based on possibilities of modulation of vitagenes, a family of genes responsible for animal adaptation to stress. In fact, the vitagene network includes heat shock proteins (HSPs), thioredoxin system, sirtuins and superoxide dismutases (SODs) and plays a regulatory role in most important cellular processes in stress conditions. Indeed, HSPs, including heme oxygenase-1 and HSP70, are responsible for protein homeostasis in stress conditions, while the thioredoxin system is the major player in maintaining redox status of the cell involved in protein and DNA synthesis and repair as well as in regulation of expression of many important genes.

Furthermore, sirtuins regulate the biological functions of various molecules post-translationally by removing acetyl groups from protein substrates ranging from histones to transcription factors and orchestrate cellular stress response by maintenance of genome integrity and protein stability. Finally, SODs belong to the first level of antioxidant defence preventing lipid and protein oxidation at the very early stages. All the vitagenes operate in concert building a reliable system of stress detection and adequate response and are key elements in stress adaptation. Our studies clearly showed that supplying vitagene-regulating nutrients (carnitine, betaine, vitamin E, etc.) via drinking water could significantly improve adaptive ability of poultry/farm animals to commercially-relevant stresses and prevent decrease in their productive and reproductive performance.

*Peter F Surai is supported by a grant of the Government of Russian Federation, Contract No. 14.W03.31.0013*

### Biography

Peter F Surai has his expertise in Animal and Human Nutrition and published a number of papers as well as two books ("Natural Antioxidants in Avian Nutrition and Reproduction", 2002; and "Selenium in Nutrition and Health", 2006) which became textbooks for animal nutritionists. His recent research is devoted to the development of effective strategies to fight commercially relevant stresses in livestock/animal production. He successfully transferred vitagene concept from Medical Sciences to Animal and Poultry Science and developed stress-prevention programs based on supplying vitagene-regulating nutrients to farm animals via drinking water. He held Honorary Professorships in Nutritional Biochemistry at various universities in the UK, Hungary, Bulgaria and Ukraine, and became a Foreign Member of Russian Academy of Sciences. For the last 15 years he has been lecturing all over the world visiting more than 70 countries.

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## Design and production of food processing machine using under water shock wave for practical application

Ken Shimojima<sup>1</sup>, Osamu Higa<sup>1</sup>, Yoshikazu Higa<sup>1</sup>, Ayumi Takemoto<sup>1</sup>, Hirofumi Iyama<sup>1</sup>, Atsushi Yasuda<sup>2</sup>, Shigeru Tanaka<sup>3</sup>, Ren Fukami<sup>3</sup>, Shigeru Itoh<sup>3</sup> and Toshiaki Watanabe<sup>4</sup>

<sup>1</sup>National Institute of Technology, Okinawa College, Japan

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<sup>3</sup>University of Kumamoto, Japan

<sup>4</sup>National Fisheries University, Japan

A food processing machine that generates underwater shock waves has been developed at OkNCT. The processing method uses a spalling phenomenon, which is different from the conventional processing method. The processing effects are improvement of extractability, softening and sterilization without heating. In this report, the following contents are reported: The processing mechanism of the spalling phenomenon by underwater shock wave and the optical observation of shock wave, The processing method of this device, result that some food was processed experimentally by this device. The summary of consecutive driving devices for practical use when a shock wave goes through the plant, it is divided

into reflection and transmission wave in the interface of the difference of density. Tension power occurs in this interface. Then, the food is crashed by this phenomenon. Figure 1 shows a food processing machine for test crashing using underwater shock wave. The device consists of a power supply, a processing unit. The pressure vessel in the processing unit is filled with water and electrode of two sets are installed in centre of vessel. Electric energy charged in a condenser is supplied to an electrode by a gap switch and a shock wave occurs with electric collapse. The food is covered by a silicone hose and it is crushed in the atmosphere. Several foods were crushed by this device and inspected for the processing effect. Results such as the milling flour of rice and the coffee, softening of a meat, carrot, apple and the sterilization of powder is introduced. Developed consecutive operation processing device on which practical use was possible.

### Biography

Ken Shimojima persuaded his Doctorate and worked as an Assistant Professor at Tokyo Denki University, Japan during 2004 and then he worked as an Assistant Professor at Sophia University, Japan from 2004 to 2009. Now he is working as an Associate Professor at National Institute of Technology, Okinawa College, Japan since 2009.

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## **A consideration of underwater shock wave behavior at interface for various acoustic impedance materials using the computational prediction**

Yoshikazu Higa<sup>1</sup>, Ken Shimojima<sup>1</sup>, Osamu Higa<sup>1</sup>, Ayumi Takemoto<sup>1</sup>, Shigeru Itoh<sup>2</sup> and Hirofumi Iyama<sup>2</sup>

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Recently, the methodology and technology of food treatment using underwater shock wave has been attracting attentions as a novel processing. The shock wave targeted in our research is a pulse wave of a momentary and high-pressure power. The pulse wave propagates in a medium such as water, air, food and faster than the speed of sound. The shock wave induced by the underwater electrical wire explosion can generate the momentary extremely high pressure power, and achieve no-heating/no-destruction associated with a flavor and nutritive value as process in microsecond timescale. Therefore, it is very expected as a novel food processing technology. An example of pre-processing meat, vegetable, food sterilization, oil extraction and rice powder manufacturing system have been experimentally reported in the past. Regarding the development of the corresponding food processing equipment, suitable devices must be designed to satisfy various conditions. Their design is extremely difficult to investigate experimentally, because there are

so many parameters to consider in ensuring suitable food processing, and the shock wave propagation phenomenon ends in a very short time. Thus, it is very helpful for a computational simulation to be performed to investigate shock wave propagation in the proposed food processing vessel. Therefore, in this paper, to reveal shock wave propagation characteristics in foods, computational models of the food, the surrounding water, and the high-pressure source were developed using the commercial finite element software. By conducting a series of numerical simulations, the pressure distribution in various foods associated with their acoustic impedances has been discussed.

### **Biography**

Yoshikazu Higa has done his Bachelor's and Master's Degree in Mechanical Engineering at University of Ryukyus and then he persuaded his Doctor of Engineering in Mechanical Engineering at Kobe University and was a Research Associate at Osaka University. He later became Lecturer at Osaka University and worked as an Associate Professor in Mechanical Systems Engineering at National Institute of Technology, Okinawa College. Then he became Professor and currently holds that position. He is currently a member of The Japan Society of Mechanical Engineers (JSME) and The Society of Materials Science, Japan (JSMS). He also serves as a Committee Member of international/domestic conferences and symposiums. His research fields are the theoretical and computational crystal plasticity and computational multiphysics. He is currently working on 80 papers dealing with experimental study and computational simulation of multiphysics phenomena. He has received the JSME Hatakeyama Prize in 1995, and the Best Paper Award in ESIT2016 conference in 2016.

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## **Sourdough bread obtained from a dough fortified with anthocyanin-rich flour from the purple potato cv. Vitelotte as nutraceutical sources: Its quality attributes**

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University of Pisa, Italy

When used in optimized proportions, sourdough can improve volume, texture, flavor, nutritional value of bread and may increase the shelf life by retarding the staling process and protecting bread from mould and bacterial spoilage. In this context, to satisfy the increasing demand for products with higher nutritional value, sourdough bread was fortified with purple potatoes, an ancient cv. Vitelotte with purple pulp. Changes in nutraceutical properties were estimated analyzing anthocyanin contents, phenolic composition as well as antioxidant power. The nutritional and chemical composition, together with the sensory profile were also described, following the methods reported in literature. The preliminary results indicate that

chemical composition of sourdough bread, as well as sensorial expression might be greatly influenced by the addition of purple potato flour. Bread also retained high levels of phenols, explaining its higher antioxidant activity compared to the traditional sourdough bread and suggests that Vitelotte can represent a good source of phenols for the fortification of bread.

### **Biography**

Angela Zinnai, graduated at Liceo Scientifico Ulisse Dini in public school in Italy and she obtained her Bachelor's Degree in Agrarian Sciences at the Faculty of Agriculture in Italy, discussing an experimental thesis titled "Conservation of products fruit and vegetables in controlled atmosphere: breathing in golden delicious apples ". She obtained her Master's Degree in Food Technology at Sant'Anna School of Advanced Studies in Italy discussing a thesis titled "Bacterial heterogenization technology in malolactic fermentation". In 1992 she was the winner of a C.N.R. scholarship and has carried out activities of research into the operating unit "Innovation of products, ingredients and semi-finished products: new products of extraction, separation, fractionation and purification", which has been renewed for the year as well next. She then earned the title of Research Doctor in Agronomy and Herbaceous Cultivation discussing a thesis titled "The kinetics of oxidative degradation of oils". She also served as a Researcher at the Faculty of Agriculture of the University of Pisa, Italy.

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## Comparative evaluation of the therapeutic effect of metformin monotherapy with metformin and acupuncture combined therapy on weight loss and insulin sensitivity in diabetic patients

Amir Firouzjaei, Guo-Chun Li, Ning Wang, Wan-Xin Liu and Bing-Mei Zhu  
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**Objective:** Obesity induces insulin resistance (IR), the key etiologic defect of type 2 diabetes mellitus (T2DM). Therefore, an incidence of obesity-induced diabetes is expected to decrease if obesity is controlled. Although, metformin is currently one of the main treatment options for T2DM in obese patients, resulting in an average of 5% weight loss, adequate weight control in all patients cannot be achieved with metformin alone. Thus, additional therapies with a weight loss effect, such as acupuncture, may improve the effectiveness of metformin.

**Subjective:** We designed this randomized clinical trial (RCT) to compare the effects of metformin monotherapy with that of metformin and acupuncture combined therapy on weight loss and insulin sensitivity among overweight/obese type 2 diabetes (T2DM) patients, to understand whether acupuncture plus metformin is a better approach than metformin only on treating diabetes and to understand whether acupuncture can be an insulin-sensitizer and, if so, its therapeutic mechanism.

**Results:** Our results show that metformin and acupuncture combined therapy significantly improves body weight,

body mass index (BMI), fasting blood sugar (FBS), fasting insulin (FINS), homeostasis model assessment index (HOMA), interleukin-6 (IL-6), tumour necrosis factor- $\alpha$  (TNF- $\alpha$ ), leptin, adiponectin, glucagon-like peptide-1 (GLP-1), resistin, serotonin, free fatty acids (FFAs), triglyceride (TG), low density lipoprotein cholesterol (LDLC), high density lipoprotein cholesterol (HDL), and ceramides.

**Conclusion:** Consequently, metformin and acupuncture combined therapy is more effective than Metformin only, proving that acupuncture is an insulin-sensitizer and can improve insulin sensitivity possibly by reducing body weight and inflammation, while improving lipid metabolism and adipokines. Thus, electro-acupuncture (EA) might be useful in controlling the ongoing epidemics in obesity and T2DM.

### Biography

Amir Firouzjaei is currently working as a Dean of Acupuncture Department at Pardis multiple pain clinic, Acupuncturist, Tehran, Iran. He completed his Clinical PhD in Chinese Medicine, Acupuncture and Moxibustion specialty, Nanjing at the University of Chinese Medicine, and Doctorate in Medicine, General Physician Specialty and the thesis is entitled, "Comparative evaluation of the therapeutic effect of Metformin monotherapy with Metformin and acupuncture combined therapy on weight loss and insulin sensitivity in diabetic patients" which is published in May 2016 in Nutrition & Diabetics, Nature Group. His paper, "Development of Acupuncture in Iran" (Academic) was awarded internationally excellent paper at the 10th World Congress of Chinese Medicine in Sep 2013, Santa Clara, California, USA. He is a Coordinator of IRSES Marie Curie project on "China and Europe taking care of health care solution, CHETCH", Jan- Dec 2015, an International Consultant and Member of Iranian Scientific Acupuncture, member of World Federation of Chinese Medicine Societies (WFCMS) and Licensed Member of The Islamic Republic of Iran Medical Council.

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## Immunomodulating effects of the $\beta$ -glucan from *Pleurotus cornucopiae* mushroom on macrophage actions

Ken-ichiro Minato<sup>1</sup>, Lisa C Laan<sup>2</sup>, Irma van Die<sup>2</sup> and Masashi Mizuno<sup>3</sup>

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<sup>2</sup>VU University Medical Center, Netherlands

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Many edible mushrooms have become attractive as health food and as source materials for immunomodulators. Recently, the polysaccharide (PCPS) from *Pleurotus citrinopileatus* mushroom has been identified as a  $\beta$ -glucan which activates dendritic cells (DCs) by upregulation of the secretion or expression of many pro-inflammatory mediators. Moreover, it has been shown that the PCPS has the capacity to activate the cells via multiple pathways. In this study, we set out to investigate the immune modulating properties of the PCPS using macrophage-like cells derived from a THP-1 cell line as well as DCs. The PCPS stimulated the THP-1 macrophages to secrete significant levels of TNF. Moreover, the mRNA expression of TNF and IL-1 $\beta$  were significantly enhanced by the PCPS treatment. However, the glucan did not induce to express both IL-12 and IL-10 mRNA in the macrophages. Next, in vivo experiments, the *P. cornucopiae* extract (containing mainly PCPS) treatment against BALB/c mice showed significant increases in TNF and IL-1 $\beta$  mRNA expressions in the peritoneal macrophages of them. These results

suggested that the PCPS could induce pro-inflammatory action in an innate immune response. Meanwhile, the PCPS-treatment did not show any influence on an expression of IFN $\gamma$  mRNA in the lymphocytes of the mice spleen despite it inhibited an expression of IL-4, an anti-inflammatory cytokine, mRNA in this study. Moreover, interestingly, regarding the influence of the PCPS on macrophage differentiation, the glucan suppressed the secretion of pro-inflammatory cytokines, such as TNF and IL-6, from differentiated macrophages, suggesting that the PCPS could promote monocyte to differentiate into M2 macrophage. These findings suggested that this edible mushroom, *P. cornucopiae*, could pleiotropically regulate macrophage activities by the  $\beta$ -glucan.

### Biography

Ken-ichiro Minato is working as an Associate Professor at Department of Applied Biological Chemistry, Meijo University, Japan. Ken-ichiro Minato devotes to find a suitable functional food which could maintain our immune system. His own research interest has been how food factors, such as polysaccharides and polyphenols, act as an immunomodulator for monocyte, macrophages and dendritic cells in an innate immune system. His current targets are both pro- and anti-inflammatory effects of  $\beta$ -glucan in edible mushrooms on activities of those innate immunocompetent cells. Another his interest is a differentiation of macrophage toward M1/M2 and their activities. Macrophages develop from hematopoietic stem cells through common myeloid progenitors in the bone marrow, and repopulate in peripheral tissues. Currently it is thought that macrophages can be classified into several different phenotypes, based on their reactions to different microenvironments. The heterogeneity of undifferentiated circulating monocytes may affect their polarization once they arrive in inflamed tissues. He hopes to find a suitable functional food, which could prevent inflammatory diseases.

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## Comparison of gut microbiota in hens of the crosses Hisex Brown and Lohmann Brown

Michael N Romanov<sup>1,2</sup>, Darren K Griffin<sup>1,2</sup>, Aleksandr N Panin<sup>2</sup>, Ivan I Kochish<sup>2</sup>, Vladimir I Smolensky<sup>2</sup>, Georgy Yu Laptev<sup>3</sup>, Ilya N Nikonov<sup>3</sup> and Larisa A Ilyina<sup>3</sup>

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Changes in the composition of the intestinal microbiota in the cecum of poultry could have a direct impact on the quality and safety of poultry products. This study presents the results of comparative molecular genetic analysis of the cecal microbiocoenoses in laying hens of two commercial crosses, Hisex Brown and Lohmann Brown, during ontogeny. According to the analysis of overall taxonomic representation, more than 70% phylotypes determined can be attributed to three: phyla, Firmicutes, Bacteroidetes, and Proteobacteria. Less represented were Actinobacteria, Tenericutes and Fusobacteria, and the presence of significant amounts of unidentified bacteria was also revealed. During ontogenesis, birds exhibited marked changes in the ratio of the number of phylotypes and taxonomic groups of the intestinal microbiota. Chickens of both crosses went through several stages in the development of microbial communities, including a stabilization period at the age of 20 to 40 weeks, as evidenced by the biodiversity assessment using ecological indexes. The stabilization period was characterised with a significant increase in representatives of class Clostridia involved

in the metabolism of carbohydrates, and in bacteria with high antagonistic properties (genera *Lactobacillus* and *Bacillus*). There was also a significant reduction of number of opportunistic and pathogenic taxa, such as families *Campylobacteraceae* and *Enterobacteriaceae*, order *Pseudomonadales*, and phylum *Tenericutes*. Despite the similar conditions of housing and feeding, the Lohmann Brown hens had a maximum level of representatives of the normal flora observed by 40 weeks of age. This probably determines a smaller number of pathogens like *Staphylococcus*, family *Campylobacteraceae*, and phyla *Tenericutes* and *Fusobacteria* found by 40 to 60 weeks of age and greater stability of intestinal microbiocoenosis in the Lohmann Brown birds as compared with the Hisex Brown chickens.

*This research is supported by a grant of the Government of Russian Federation, Contract No. 14.W03.31.0013*

### Biography

Michael N Romanov has his expertise in avian genetics and genomics including participation in a number of national and international research projects in the areas of avian genetic diversity, gene/genome mapping, candidate genes evaluation, and comparative genomics. After years of experience in studies and teaching in both research and education institutions, he recently began leading on a project sponsored by the Government of Russian Federation. The project is aimed at developing state-of-the-art biotechnologies to assess gene expression in relation to performance and disease resistance in poultry industry, and will be done in collaboration with the Moscow State Academy of Veterinary Medicine and Biotechnology in 2017–2019.

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## **Analysis of nutrient management program at the health centers in Region District Health Bireuen, Aceh, Indonesia in the year 2011**

**Mainora**

Bireuen District Health Office, Indonesia


**S**ystems approach in management is an approach in improving health care quality in integral. The system is made up of several components that influence each other; these components are the input, process and output. Authors are interested in seeing the analysis of nutrient management programs in health centers in the county health department because of several factors, namely Bireuen energy, less weight infants and the ability of local administration. The purpose of the study is to analyze the

management of nutrition programs in health centers in Bireuen district health office with a systematic approach which consists of three components, namely input, process, and output. Descriptive study design evaluation studies that use the research to assess a program that is being or has been done to repair or improve program was conducted in May 2012. The sample population was 18 people and implemented Energy Nutrition (Nutrition Coordinator) in 18 health centers in the area of Bireuen district health department.

### **Biography**

Mainora, a civil servant in charge of Bireuen District Health Office, Aceh, Indonesia as manager of Nutrition program. She is currently studying at the University of Indonesia public health postgraduate. She has published many research papers in National and International Journals.

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15<sup>th</sup> World Congress on

# Advances in Nutrition, Food Science & Technology

September 11-12, 2017 Edinburgh, Scotland

## Scientific Tracks & Abstracts Day 2

Nutrition World 2017



**Super Food and Functional Foods | Probiotic in Nutrition  
Advancement | Food Safety and Security Challenges  
| Food Biotechnology and Microbiology Food Waste  
Management | Food Chemistry and Biochemistry | Food  
Technologies and Processing Food Industry**

**Session Chair**  
**Sreenivasa Rao Jarapala**  
*National Institute of Nutrition, India*

**Session Co-chair**  
**Angela Zinnai**  
*University of Pisa, Italy*

**Session Introduction**

- Title: Determination of microbiocoenoses in the intestine of the Hisex Brown hens in ontogenesis using T-RFLP method**  
**Michael N Romanov**, University of Kent, UK & Moscow State Academy of Veterinary Medicine and Biotechnology, Russia
- Title: Protein intake in infancy: Difference between needs and supply**  
**Naguib A bdelreheim**, University of Sharjah, UAE
- Title: The effect of a zinc-algal polysaccharide complex on preventing contamination of food emulsions**  
**Irit Dvir**, Sapir Academic College, Israel
- Title: Effect of domestic processing methods on all Trans and cis isomers of beta carotene retention in green leafy vegetables**  
**Sreenivasa Rao Jarapala**, National Institute of Nutrition, India
- Title: The prevalence of complications in Type 2 diabetics in diabetes centers in Dubai**  
**Haleama Al Sabbah**, Zayed University, UAE
- Title: Consumers' acceptance and preferences for functional dairy products in Iran**  
**Bazhan M**, Shahid Beheshti University of Medical Sciences, Iran
- Title: Greek children suffering from asthma abandon Mediterranean dietary pattern: Baseline results**  
**M M Papamichael**, La Trobe University, Australia

**YRF**

- Title: AFB1 removal by lactobacillus plantarum in artificially contaminated environment**  
**Sebnem Kurhan**, Novel Food Technologies Development-Application and Research Center, Turkey
- Title: The influence of the operating conditions adopted during the extraction on the qualitative and typical characteristics of Tuscan mono-varietal oils (Moraiolo, Leccino, Frantoio)**  
**Anita Nari**, University of Pisa, Italy

## Determination of microbiocenosis in the intestine of the Hisex Brown hens in ontogenesis using T-RFLP method

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**M**icrobiocenosis in the gastrointestinal tract, especially in the ceca, play an important part in life processes of poultry. Identification of the structure and taxonomic composition of microorganisms in the cecum using molecular genetic methods serves as a crucial approach in understanding how a cecal microbiota interplays with the chicken organism during ontogenesis. For this purpose, we studied an intestinal bacterial community composition in the ceca of the Hisex Brown laying hens at age of 40, 155 and 315 days using T-RFLP and RT-PCR. In the chickens studied, development of the cecal microbial communities, changes in their content, and appearance of new microorganisms occurred in the ontogeny. A broader spectrum of bacteria was found in 40- and 155-day-old birds (221±11 and 258±9 phylotypes, respectively) as compared with 315-day-old laying hens (178±8 phylotypes). Also, 315-day-old birds showed the least content of unidentified phylotypes. In the ceca of adult hens, there was a change in the dominant microbial

taxonomic groups including a higher proportion of acid-utilising bacteria of the class Negativicutes and cellulolytic bacteria of the class Clostridia, with a lower content of the classes Bifidobacteriales and Bacillales. Lactobacteria (order Lactobacillales) showed a greater content in 315-day-old laying hens (33.15±1.05%) as compared with 40- and 155-day-old birds (5.13±0.23% and 24.58 ± 0.86%, respectively). The variety and number of bacteria in the ceca conventionally attributed to various pathogens of poultry diseases, including the genera *Enterobacter*, *Pantoea*, *Listeria*, *Acinetobacter* and *Mycoplasma*, families *Campylobacteraceae* and *Pasteurellaceae*, and phylum *Fusobacteria*, increased with the age of birds. Thus, during molecular genetic studies, the species composition and dynamics of the microbiocenosis in the cecum of the Hisex Brown laying hens was determined as related to their ontogeny.

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### Biography

Michael N Romanov has his expertise in avian genetics and genomics including participation in many national and international research projects in the areas of avian genetic diversity, gene/genome mapping, candidate genes evaluation, and comparative genomics. After years of experience in studies and teaching in both research and education institutions, he recently began leading on a project sponsored by the Government of Russian Federation. The project is aimed at developing state-of-the-art biotechnologies to assess gene expression in relation to performance and disease resistance in poultry industry, and will be done in collaboration with the Moscow State Academy of Veterinary Medicine and Biotechnology in 2017–2019.

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## Protein intake in infancy: Difference between needs and supply

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Of the 50 or so known essential macronutrients and micronutrients, protein is by far the most important for human development and health. Protein is a major structural component of all cells in the body. It functions as enzymes, hormones and transport carriers. Protein is also required for synthesis of nucleic acids, hormones, vitamins, and others. Recommended dietary allowance (RDA) of protein is the safe level of intake which will satisfy the protein needs. Both protein excess and deficiency in infancy can lead to disease. Excessive protein intake leads to increased blood concentration of non-metabolised amino acids, particularly insulin-releasing amino acids: valine, leucine, isoleucine and threonine. According to the "Early Protein Hypothesis", excessive protein intake in early life "programmes" a tendency towards increased early weight gain and formation of fat cells (adipogenic

activity). Chronic protein deficiency can result in faltering or stunting which can lead to impaired brain development, lower IQ, weakened immune systems, and greater risk of diseases like diabetes and cancer later in life. While breast milk provides the exact amount and quality of protein in the first year, Formula milk usually contain high protein quantity to compensate for the protein quality required for proper growth and development. Because of improper quantity and quality of protein unmodified Cow's Milk is not recommended for infants by all societies like AAP, ESPGHAN and WHO.

### Biography

Naguib A bdelreheim has professional experience in academic appointments with the University of Sharjah, UAE, as an Assistant Professor of Paediatrics in the College of Medicine and Health Sciences. He is also the chairman of the hospital CME Committee at UHS and provides leadership, coordination and direction to both internal and external CME programs. He earned his Medical degree from Cairo University, Egypt. He completed his Master's degree from Ain Sham University, Egypt and Degree of Doctor in Pediatrics from the same university. He also has a postgraduate diploma in diabetes from Leicester University, UK.

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## The effect of a zinc-algal polysaccharide complex on preventing contamination of food emulsions

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The potential applicability of algae as a bioresource for the sustainable production of foods, cosmetics and pharmaceutical products is virtually unlimited. The exploitation of algal bioresources is timely in light of the current market trend toward a greater reliance on natural products. Among the principal algal sources are red microalgae, which produce unique biochemicals including novel sulfated polysaccharides (PS). In recent years, Arad laboratory has developed the biotechnology for the production of valuable products based on red microalgae with an emphasis on isolated sulfated polysaccharides found in the algal cell wall. The combination of the diverse biological activities of these novel molecules (e.g. antiviral, antioxidant, anti-inflammatory and soothing properties), with their distinctive properties (i.e., composition, structure, rheology and extreme stability), can be exploited across a vast range of applications in the pharmaceutical, cosmetics, and food industries. The red microalga, *Porphyridium* sp., is encapsulated within a negatively charged PS that has unique rheological characteristics which make it an excellent emulsifier. The PS was shown to act as a platform for metal incorporation,

taking advantage of its ion-exchange capabilities and its negative charge. In the current study we investigated the combination of emulsifying and antibacterial activities of a Zn-PS complex. It was shown that dairy emulsions and oil-in water emulsions were stable in low concentrations of Zn-PS complex (<0.2% and <500 ppm Zn). The Zn-PS complex was also shown to have higher effect on inhibition of bacterial growth when compared with the algal polysaccharide alone. These results suggest that the Zn-PS complex has significant potential as a novel emulsifier that also inhibits food contamination. Overall, the data support the potential of using functional sulfated polysaccharides from red microalgae to stabilize emulsions and to act as an antibacterial agent in food applications. As such, the sulfated polysaccharide of the red microalga *Porphyridium* sp. is of particular interest. The results of this study may hold important implications for the possible utilization of red microalgal polysaccharides as a novel additive in food manufacturing.

### Biography

Irit Dvir completed PhD at the Ben-Gurion University of the Negev, Israel in 1999. She is an expert in the study of algae and its uses in the food industry and as a dietary supplement. Currently she is a Senior Lecturer and Head of the Chemistry and Life Sciences program at Sapir Academic College, Israel. She is a member of the Council of Young Israeli Entrepreneurs and is always looking for original and innovative research projects. She has published papers in reputed international journals. Much of her work is interdisciplinary and extends beyond red microalgae to include nutrition and food manufacturing. Development of novel functional foods that can positively impact health and prevent or treat metabolic diseases such as diabetes and obesity.

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## Effect of domestic processing methods on all trans and cis isomers of beta carotene retention in green leafy vegetables

Sreenivasa Rao Jarapala and Bhaskarachary Kandlakunta  
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**G**reen leafy vegetables (GLVs) are pigment-rich and nutritionally relevant functional food sources with unique phytochemical constitution that includes carotenoids. Carotenoids and their geometric isomers protect cells from oxidation and cellular damages. Cooking processes that involve factors such as temperature, light and alteration in moisture content generally promote either isomerization (trans to cis form) or oxidative degradation of carotenoids to epoxides. Studies pertaining to the effect of cooking methods on dietary carotenoids and their geometric isomers are inadequate in Indian foods. The extent of carotenoid isomerization were evaluated in GLVs such as amaranth (*Amaranthus gangeticus*), spinach (*Spinacia oleracea*) and curry leaves (*Murraya koenigii*) subjected to domestic cooking methods of microwave, sautéing, pressure cooking and deep frying in oil for time durations of 8 and 12 minutes, either with and without lid covering. The isomers of carotenoids were quantified by high performance liquid chromatography (HPLC) using vydac column (RP-C-18) with 100% methanol for first 5 minutes and methanol: chloroform (96:4) for the subsequent run as gradient mobile phase.  $\beta$ -carotene content in amaranth ranged from 5525 to 6375  $\mu\text{g}/100\text{g}$  upon boiling without lid and microwave

cooking. 9-cis isomer of beta carotene is the predominant geometric isomer formed during cooking in all the GLV studied (Amaranth: 423 to 620, Spinach: 377 to 443, Curry leaves: 562 to 687  $\mu\text{g}/100\text{g}$ ). 13 cis isomers also formed in the processed GLV samples (22 to 375  $\mu\text{g}/100\text{g}$ ). 15 cis beta carotenes were observed in few food samples during processing and not observed in some of the methods which processed. The retention percentage of all *trans* and *cis* beta carotene was also studied. These isomers of beta carotenes were also for the precursors of Vitamin A. The changes in the contents of *trans* and *cis* isomers of carotenes in GLVs in correlation to various cooking methods are discussed which would be valuable for food researchers, nutritionists and health practitioners in promoting nutritionally balanced diets and minimize vitamin A deficiency in Indian context.

### Biography

Sreenivasa Rao Jarapala has his expertise in nutrition and micronutrient evaluation studies from foods and indigenous food samples and passion in improving the retention of micronutrients using processing methods towards the health and wellbeing. He is working on plant secondary metabolites and bio conversion of beta carotene to vitamin A in plant foods. He has published his research contributions in elsewhere journals. He is having two decades of experience in nutrition research and teaching in institution. His research contributions on micronutrients retention studies may help to prevent the vitamin A deficiencies in developing world. He received young scientist award (Sagarmal goenka) in 2012 and best research paper award in nutrition research from USA in 2016. Presently he is working on tribal indigenous foods, plant secondary metabolites and heavy metals in Indian foods. His core area of research is carotenoids bio accessibility and bioconversion to vitamin A and nutrient retention in foods. He is a Life Member of NSI, SBCCI, IDA, IIS and several other nutrition relevant research bodies.

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## The prevalence of complications in Type 2 diabetics in diabetes centers in Dubai

Haleama Al Sabbah and Moza Alketbi  
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**Background:** Diabetes complications have been increasingly prevalent among type 2 diabetics during the past decades causing high rates of morbidity and mortality. Measures of the prevalence of diabetes complications will lead to preventive decisions and planning of health care.

**Objective:** To assess the prevalence rates of complications in Type 2 diabetics in two Diabetes Centers in Dubai.

**Methodology:** A cross-sectional descriptive analytical study conducted among type 2 diabetics attending diabetes centers in Dubai. Data was collected from secondary source using patient's records from two diabetes centers involved in the study. Random sampling technique was used to collect 150 patients proportionally allocated according to the total patients (4700 attending patients) available in the two diabetes centers.

**Results:** The study showed that the most dominant prevalence type of complications: Hyperlipidemia (84%), Neuropathy (34%), Dyslipidemia (32%), Retinopathy (28%), Lethargy (21.3%), and Nephropathy (16.7%).

The associations made between three variables each separately (Date of First Visit, HbA1c, and Fasting Blood Glucose) with the prevalence type of complications, showed significant differences in some types: Dyslipidemia, Hyperlipidemia, and Neuropathy, Retinopathy, and Joint & Bone pain.

**Conclusion:** There is a reasonable correlation between different variables and the prevalence of complications among the diabetic population, thus studies should always follow up on this issue in order to have clear associations to prevent complications from occurring in the first place.

### Biography

Haleama Al Sabbah is currently working at Zayed University, Dubai at the Public Health Nutrition Department since Sept 2013. She has completed her PhD in Public Health Nutrition in 2008 from Gent University, Belgium. She has completed Master in International Community Health with special focus on Diabetes Self-Management in 2000 from Oslo University, Norway. She was a Fulbright Visiting Scholar, did her Post-Doctoral studies in Nutrition at Tufts University, Jean Mayer Human Nutrition Center (2011-2012). She was the director of Public Health Department at the Faculty of Medicine, An-Najah National University, West Bank Palestine. She has many published articles in scientific peer-reviewed journals and serves as an editorial board member and reviewer for many scientific journals. She has participated in many conferences, courses and research studies all over the world including Europe, USA, Canada, West Africa and some Arab countries. Her Specialties include: Public Health, Nutrition, Obesity, Diabetes and Research.

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## Consumers' acceptance and preferences for functional dairy products in Iran

Marjan Bazhan, Nastaran Keshavarz-Mohammadi, Naser Kalantari, Hedayat Hosseini and Hamid Alavi-Majd  
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In the last decades, consumer demand for health-enhancing food products, such as functional foods, has rapidly grown due to rising costs of health care, increase in life expectancy and desire for improved quality of life. Given the novelty of functional dairy products in Iranian market, and considering the fact that consumers' acceptance play an important role in the success of marketing a product, this study was conducted to fill the knowledge gap in this regard. Four hundred consumers aged between 25 to 65 years were selected from ten major chain stores in different geographical areas in Tehran, the capital of Iran, through multistage sampling method. The data were collected by a researcher-made questionnaire that its validity and reliability had been measured. In general, 95% of the subjects consumed at least one of the functional dairy products. Low-fat dairy products (91%) and vitamin D or omega-3 polyunsaturated fatty acids fortified dairy products (20%) had the highest and lowest percentage of intake among the consumers, respectively. Women

( $p=0.042$ ), those with higher education ( $p=0.012$ ) and higher average attitude score ( $p=0.007$ ), and households with children under 18 ( $p=0.041$ ) showed high acceptance and preferences for functional dairy products. Familiarity with functional dairy products and their health properties; interest in maintaining and improving health and disease prevention; sensory and non-sensory features of the product such as taste, quality, price, having safety and health sign, and being

Healthy; and the product availability were also found to be related to the acceptance for functional dairy products. To the best of our knowledge, this study is the first in this regard in Iran. The factors listed above should be considered both in productions of dairy foods and in their promotion plans. This understanding can contribute to success of interventions to increase consumption of these products among consumers.

### Biography

Marjan Bazhan is working at the Faculty of Nutrition Sciences and Food Technology, Shahid Beheshti University of Medical Sciences, Iran. She received her PhD in Nutrition Sciences from Shahid Beheshti University of Medical Sciences, Iran. She has expertise in the field of Community Nutrition, Behavior Change, and Health Promotion.

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## Greek children suffering from asthma abandon Mediterranean dietary pattern: Baseline results

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<sup>3</sup>European Institute of Nutritional Medicine, Italy

**Statement of problem:** The rapid rise in paediatric asthma has become a major public health concern. Apart from a genetic predisposition, poor dietary habits have been implicated as one of the environmental factors responsible for the asthma epidemic. Emerging evidence from observational studies has documented a reduction in asthma prevalence and wheezing in children consuming a Mediterranean diet. However, intervention trials investigating the association between food groups and dietary patterns in children are lacking.

**Purpose:** The purpose of this RCT study is to investigate whether an increase in fatty fish consumption in the context of a Mediterranean diet reduces asthma symptoms in Greek children.

**Methodology:** Children aged 5-12 years with doctor-diagnosed 'mild asthma' were recruited from a paediatric asthma clinic in Athens, Greece and randomized into two groups. The intervention group is instructed to consume 2 serves of fatty fish per week (at least 150g cooked fish/

serve) for 6 months. And the control group, their usual diet. Questionnaires are used to collect information on medical, dietary, socio-demographic, asthma control and quality of life. Respiratory function is evaluated using spirometry and exhaled nitric oxide analysis. KIDMED test is used to evaluate adherence to the Mediterranean dietary pattern.

**Findings:** At baseline, from a sample of 72 children (54.2% boys, 45.8% girls), mean KIDMED score is  $5.38 \pm 2.02$ ; 21.1% of children have "Very low adherence", 60.6% "Need for improvement" and 18.3% "Optimal Mediterranean diet" adherence according to the KIDMED test.

**Conclusion & Significance:** There is a clear trend of abandonment of the Mediterranean lifestyle in Greek children. Given the sustainability and overall health benefits of the Mediterranean dietary pattern, it is essential that public health strategies focus on its promotion. Future clinical trials are recommended to provide concrete evidence on the efficacy of the Mediterranean diet in the management of childhood asthma.

### Biography

M M Papamichael is a registered Dietician who has dedicated her life in educating people the importance of good nutrition and exercise in the prevention and management of disease as well as in improving health and well-being. Being an asthma sufferer since childhood, has motivated her to undertake a PhD research project at La Trobe University to investigate the prophylactic potential of a Mediterranean diet enriched with fatty fish in the management of asthma in children.

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15<sup>th</sup> World Congress on

# Advances in Nutrition, Food Science & Technology

September 11-12, 2017 Edinburgh, Scotland

## Young Researchers Forum

Nutrition World 2017



## AFB1 removal by lactobacillus plantarum in artificially contaminated environment

Sebnem Kurhan and Ibrahim Cakir

Novel Food Technologies Development-Application and Research Center, Turkey

Lactic acid bacteria whose most of the member belong probiotics are subjected to many research related with their anti-carcinogenic properties. *Lactobacillus plantarum* is typically responsible for “plant” fermentation including pickle and olive fermentations. Due to their widespread existence in the human and animal diet led to gain attraction. In this study, we aimed to investigate that the AFB1 removal property of indigenous isolate of *L. plantarum*. *L. plantarum* (109 cells/mL) was co-incubated with 5ppm AFB1 containing PBS and samples were collected 0, 3, 6, 12 and 24 hours and immediately analyzed using high performance liquid chromatography equipped with fluorescence detector (HPLC-FLD) without extraction step. *L. plantarum* cell viability did not change

during the co-incubation. HPLC-FLD results showed us *L. plantarum* cells significantly (75.93% ±3.43) reduced the AFB1 at 12h. This decontamination was not formed any by-product. Thus *L. plantarum* is capable of AFB1 removal in artificially contaminated environment safely and may prevent chronic exposure in gut before reaching the kidney.

### Biography

Sebnem Kurhan graduated from Uludag University, Bursa, Turkey as Food Engineer in 2010 and attended for Master of Science program in Department of Food Engineering, Ankara University, Ankara, Turkey. In 2012 she received a Master's degree. After a short experience in private sector, she now works as a specialist. She completed PhD at 2013 spring semester in Abant Izzet Baysal University, Bolu, Turkey. She works on “DNA-bioprotective effects of industrially important lactic acid bacteria” in her thesis. She has worked as a researcher in 9 national projects and published 1 paper and made 2 oral and 2 poster presentations as author in different international congresses. She has been working as a specialist in Novel Food Technologies Development, Application and Research Center in Abant Izzet Baysal University. She is using actively high performance liquid chromatography (HPLC), gas chromatography, laser scanning confocal microscope, flow cytometer and particle size analyzer.

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## **The influence of the operating conditions adopted during the extraction on the qualitative and typical characteristics of Tuscan mono-varietal oils (Moraiolo, Leccino, Frantoio)**

Anita Nari, Angela Zinnai, Chiara Sanmartin, Anita Nari, Isabella Taglieri, Gianpaolo Andrich and Francesca Venturi  
University of Pisa, Italy

As widely reported in literature, recent studies have remarked and describe the safety and nutritional quality of extra-virgin olive oil (EVOO), focusing on its wealth of bioactive compounds (polyphenols, tocopherols, etc.) in preventing oxidation of the lipid components and, therefore, the formation of free radical damaging for human health. These bioactive actions seem to be due both to the quality of raw material (olive fruits) and to the technology adopted for the extraction, indeed the chemical composition and the sensory characteristics of the EVOO is deeply influenced by the technological parameters adopted. In particular the utilization of suitable working conditions (time and temperature used during the individual phases of the extraction process) could potentially offer the real possibility to plan the concentration of phenolic and volatile components in olive oil and to modulate its nutraceutical

properties as well as sensorial perception profile. The main aim of this research project was to describe the influence of the operating conditions (i.e. climate trends, water regime (irrigated or not-irrigated) on the qualitative and typical characteristics showed by Tuscan mono-varietal EVOOs (Moraiolo, Leccino, Frantoio) during two different crop seasons (2014 vs 2015) characterized by very different climate trends; moreover, during the same year (2015), different water regime (irrigated or non-irrigated) were also compared. The experimental data collected show the suitability of the adopted operational decisions to the different conditions (cultivar, climate, water regime) allowing to obtain oils with more favorable compositional indices than those provided by extra virgin olive oil according to the regulation for "Tuscan Protected Geographical Indication".

### **Biography**

Anita Nari is graduated in Food Biosafety and Quality. She is a PhD student (II year) in Agriculture, Food and Environment at the University of Pisa with a research project about producing olive oil with a high nutraceutical and organoleptic quality using innovative operative technique (extraction and storage methods). She is interested in R&D activities, development and validation of analytical methods for food quality of raw materials and products, qualification, characterization and monitoring of food technologies.

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