

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

# ADVANCES IN NUTRITION FOOD SCIENCE & TECHNOLOGY

September 11-12, 2017 Edinburgh, Scotland

**Allied Academies - UK**

85 Great Portland St, Marylebone, London W1W 7LT, UK





***Nutrition World 2017***

# Conference Day 1 | September 11, 2017

## Balvenie Glenmorangie

08:30-09:00

Registration Desk Opens

09:00-09:30

Welcome Note & Opening Ceremony

### KEYNOTE

09:35-10:15

**Title: Controlling obesity-derived hepatic lipidosis and carcinogenesis through dietary broccoli**

**Elizabeth Jeffery**, University of Illinois, USA

10:15-10:55

**Title: Suppression of intestinally mediated diseases by consumption of polyphenol rich Sorghum Brans**

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

### Group Photo

### NETWORK & REFRESHMENT BREAK 10:55-11:15 @ Academy Breakout Lounge

**Major Sessions:** 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

11:15-11:40

**Title: Low-calorie diet and exercise in management of obesity, affect the overall health condition: A Successful Story**

**Suhair Abdalla Khalil Abdalla**, King Faisal Specialist Hospital and Research Center, KSA

11:40-12:05

**Title: Carbohydrates counting as a medical nutrition therapy for diabetes mellitus**

**M B Agieb**, Saudi German Hospital, KSA

12:05-12:30

**Title: The relationship between glucose and lipid metabolism parameters and carcass characteristics in finishing cattle**

**Benjamin M Bohrer**, University of Guelph, Canada

12:30-12:55

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

**Peter F Surai**, Feed-Food Ltd, UK

### LUNCH BREAK 12:55-13:45 @ Traders Restaurant

13:45-14:10

**Title: Design and production of food processing machine using under water shock wave for practical application**

**Ken Shimajima**, National Institute of Technology, Okinawa College, Japan

14:10-14:35

**Title: A consideration of underwater shock wave behaviour at interface for various acoustic impedance materials using the computational prediction**

**Yoshikazu Higa**, National Institute of Technology, Okinawa College, Japan

14:35-15:00

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

**Angela Zinnai**, University of Pisa, Italy

15:00-15:25

**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**

**Amir Firouzjaei**, Nanjing University of Chinese Medicine, China

**NETWORK & REFRESHMENT BREAK 15:25-15:45 @ Academy Breakout Lounge**

15:45-16:10

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

**Ken-ichiro Minato**, Meijo University, Japan

16:10-16:35

**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

16:35-17:00

**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

**PANEL DISCUSSIONS**

## **Conference Day 2 | September 12, 2017**

### **Balvenie Glenmorangie**

**KEYNOTE**

09:35-10:15

**Title: Microbiome and antioxidant system of the gut in chicken: Food for thoughts**

**Peter F Surai**, Feed-Food Ltd, UK

10:15-10:55

**Title: Density and value of nutrients in plant-based food products when compared with traditional animal-based food products**

**Benjamin M Bohrer**, University of Guelph, Canada

**NETWORK & REFRESHMENT BREAK 10:55-11:15 @ Academy Breakout Lounge**

11:15-11:55

**Title: Major food nutrients and food chemistry are the most powerful tool for the health, reduction in global poverty and hunger in the developing countries of the world like South Asia**

**M Usman**, Pakistan Agricultural Research System, Pakistan

**Major Sessions:** 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

11:55-12:20

**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

12:20-12:45

**Title: Protein intake in infancy: Difference between needs and supply**

**Naguib A bdelreheim**, University of Sharjah, UAE

12:45-13:10

**Title: The effect of a zinc-algal polysaccharide complex on preventing contamination of food emulsions**

**Irit Dvir**, Sapir Academic College, Israel

#### LUNCH BREAK 13:10-13:55 @ Traders Restaurant

13:55-14:20

**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

14:20-14:45

**Title: The prevalence of complications in Type 2 diabetics in diabetes centers in Dubai**

**Haleama Al Sabbah**, Zayed University, UAE

14:45-15:10

**Title: Consumers' acceptance and preferences for functional dairy products in Iran**

**Marjan Bazhan**, Shahid Beheshti University of Medical Sciences, Iran

15:10-15:35

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

**M M Papamichael**, La Trobe University, Australia

#### NETWORK & REFRESHMENT BREAK + Poster Presentations 15:35-16:10 @ Academy Breakout Lounge

NUTRFT 01

**Title: Polycyclic aromatic hydrocarbon binding characteristics of lactobacillus rhamnosus NRRL B-442**

**Sebnem Kurhan**, Novel Food Technologies Development-Application and Research Center, Turkey

|           |   |
|-----------|---|
| NUTRFT 02 | <b>Title: Chemical and sensory characterization of grape and wine GRECHETTO: Evaluation of technological potentialities as a function of the harvest date</b><br>Anita Nari & Angela Zinnai, University of Pisa, Italy                      |
| NUTRFT 03 | <b>Title: Comparison between sangiovese grapes composition and quality of the wine aged in oak barrels obtained with or without early defoliation</b><br>Anita Nari & Angela Zinnai, University of Pisa, Italy                              |
| NUTRFT 04 | <b>Title: Proteins, catabolism, and sepsis: A literature review</b><br>Macarena L Fernandez Carro, University of Manchester, UK   |
| NUTRFT 05 | <b>Title: Associations of vitamin D intake and other risk factors with 25-hydroxyvitamin D concentrations in ethnic minority adults living in the UK</b><br>Mona S Almujaaydil, Manchester Metropolitan University, UK                      |
| NUTRFT 06 | <b>Title: Mediterranean diet and GERD symptoms: A case control study in Lebanese adults</b><br>Jacqueline H Doumit, Notre Dame University-Louaize, Lebanon  |
| NUTRFT 07 | <b>Title: The warning of the consumers about the effect of food synthetic dyes on children</b><br>Saoud Zahia, Institut Pasteur of Algeria, Algeria   |
| NUTRFT 08 | <b>Title: Acceptability, nutritional and non-nutritional components of rice [Oryza sativa (L.)] and pigmented corn [ZEA MAYS (L.)] grits mix</b><br>Theresa Krista B Jolejole, University of the Philippines Los Baños College, Philippines |
| NUTRFT 09 | <b>Title: Role of aged crushed Allium Sativum L. on systemic inflammatory markers in patients with Syndrome-X</b><br>Prema Ram Choudhary, C U Shah Medical College, India   |

#### Young Researchers Forum (YRF)

|             |  |
|-------------|--|
| 16:10-16:35 | <b>Title: AFB1 removal by lactobacillus plantarum in artificially contaminated environment</b><br>Sebnem Kurhan, Novel Food Technologies Development-Application and Research Center, Turkey   |
| 16:35-17:00 | <b>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)</b><br>Anita Nari, University of Pisa, Italy |

#### PANEL DISCUSSIONS

#### Thanks Giving & Closing Ceremony

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

# Advances in Nutrition, Food Science & Technology

September 11-12, 2017 Edinburgh, Scotland

Supporting Journals

Nutrition World 2017





# Supporting Journals

Insights in Nutrition and Metabolism

[www.alliedacademies.org/insights-in-nutrition-and-metabolism](http://www.alliedacademies.org/insights-in-nutrition-and-metabolism)

Journal of Food Technology and Preservation

[www.alliedacademies.org/food-technology-and-preservation](http://www.alliedacademies.org/food-technology-and-preservation)



*Nutrition World 2017*



# Global Assembling of Academicians, Researchers, Scholars & Industry to disseminate and exchange information at 200+ Allied Academies Conferences

|   |  |  |
|---|--|--|
| <b>AGRI, FOOD &amp; AQUA</b>  | 26 <sup>th</sup> International Conference on <b>Clinical Diabetes</b><br>Dec 14-16, 2017 Rome, Italy                           | International conference on <b>Bacteriology, Infectious Diseases &amp; Control</b><br>Sep 18-19, 2017 Dallas, USA            |
| International Congress on <b>Organic Farming</b><br>Oct 2-3, 2017 London, UK  | <b>ENGINEERING</b>   | International Conference on <b>Infectious Diseases, Therapies &amp; Control</b><br>Nov 01-02, 2017 Toronto, Canada           |
| <b>ALTERNATIVE HEALTH CARE</b>  | International Conference on <b>Modeling and Simulation</b><br>Sep 28-29, 2017 London, UK                                       | 2 <sup>nd</sup> International Conference on <b>Worldwide Infectious Diseases</b><br>Nov 06-08, 2017 New Orleans, USA         |
| 8 <sup>th</sup> International Conference on <b>Herbal &amp; Alternative Medicine</b><br>Sep 01-02, 2017 London, UK  | World Congress on <b>3D Printing &amp; Medicine</b><br>Oct 05-06, 2017 Las Vegas, USA  | <b>MATERIALS SCIENCE</b>   |
| <b>BIO ENGINEERING</b>  | International Business Meeting on <b>Cloud and Internet of Things</b><br>Oct 05-06, 2017 Las Vegas, USA                        | 13 <sup>th</sup> Annual Conference on <b>Materials Science, Metal &amp; Manufacturing</b><br>Oct 26-27, 2017 Paris, France   |
| International Conference on <b>3D Printing in Medicine</b><br>Oct 05-06, 2017 Las Vegas, USA                        | <b>ENVIRONMENTAL SCIENCES</b>  | <b>MICROBIOLOGY</b>  |
| <b>BIOCHEMISTRY</b>   | 5 <sup>th</sup> International conference on <b>Plastic Recycling</b><br>Sep 07-08, 2017 Paris, France                          | 2 <sup>nd</sup> International Microbiologists Annual <b>Congress</b> Sep 21-22, 2017 Dallas, USA                             |
| International Conference & Exhibition on <b>Biochemistry</b><br>Nov 02-03, 2017 Chicago, USA                        | <b>GASTROENTEROLOGY</b>  | <b>Global Applied Microbiology Conference and Expo</b><br>Oct 18-19, 2017 Toronto, Canada                                    |
| <b>CANCER &amp; ONCOLOGY</b>  | <b>World Liver Conference</b><br>Nov 09-10, 2017 New Orleans, USA  | <b>International Virology Conference</b><br>Oct 30-31, 2017 Toronto, Canada  |
| International Conference on <b>Cancer Biology and Therapeutics</b><br>Sep 20-21, 2017 Dallas, USA                   | <b>GENETICS &amp; MOLECULAR BIOLOGY</b>  | International Conference on <b>Zoology &amp; Medical Parasitology</b><br>Oct 30-Nov 01, 2017 Chicago, USA                    |
| <b>World Cancer and Immuno Therapeutics Convention</b><br>Sep 27-28, 2017 Chicago, USA                              | Annual Molecular biology and R&D Summit<br>Oct 23-24, 2017 Toronto, Canada   | <b>NANOTECHNOLOGY</b>  |
| 21 <sup>st</sup> Global Experts Meeting on <b>Oncology Case Reports</b><br>Oct 23-24, 2017 Toronto, Canada          | International Congress on <b>Cell Biology and Gene Therapy</b><br>Oct 25-26, 2017 Toronto, Canada                              | International Conference on <b>Advanced Nanotechnology</b><br>Sep 11-13, 2017 Amsterdam, Netherlands                         |
| International Conference on <b>Oncology and Cancer Therapeutics</b><br>Oct 30-Nov 1, 2017 Chicago, USA              | Annual Congress on <b>Tissue preservation and Bio-banking</b><br>Nov 01-02, 2017 Toronto, Canada                               | World Conference on <b>Nano Medicine and Advancements</b><br>Nov 06-08, 2017 New Orleans, USA                                |
| International Conference on <b>Gynecologic Oncology</b><br>Oct 05-06, 2017 Las Vegas, USA                           | 8 <sup>th</sup> International Conference on <b>Genomics and Pharmacogenomics</b><br>Nov 02-03, 2017 Toronto, Canada            | <b>NEUROSCIENCE</b>  |
| 21 <sup>st</sup> Global Experts Meeting on <b>Oncology Case Reports</b><br>Oct 05-06, 2017 Las Vegas, USA           | 4 <sup>th</sup> World Congress on <b>Medical Genetics and Genomics</b><br>Dec 14-16, 2017 Rome, Italy                          | 4 <sup>th</sup> International Conference on <b>Neurology and Neuroimmunology</b><br>Sep 18-20, 2017 Dallas, USA              |
| <b>CARDIOLOGY</b>   | <b>HEALTHCARE</b>  | 8 <sup>th</sup> International Conference on <b>Neuro Pharmaceutics and Neuro Pharmacology</b><br>Oct 10-11, 2017 London, UK  |
| Annual Conference on <b>Heart Diseases</b><br>Sep 18-19, 2017 Toronto, Canada                                       | International Obstetricians and Gynaecologists <b>Summit</b> Oct 18-19, 2017 Toronto, Canada                                   | 17 <sup>th</sup> International conference on <b>Neurology &amp; Neurological Sciences</b><br>Oct 19-21, 2017 Toronto, Canada |
| <b>CHEMISTRY</b>  | <b>HEALTHCARE MANAGEMENT</b>   | 3 <sup>rd</sup> International Conference on <b>Sleep Disorders and Medicine</b><br>Nov 02-03, 2017 Chicago, USA              |
| International Conference on <b>Chemistry</b><br>Oct 02-04, 2017 Las Vegas, USA                                      | International Conference on <b>Tropical Medicine &amp; Infectious Diseases</b><br>Sep 7-9, 2017 Edinburgh, Scotland            | 4 <sup>th</sup> International Conference on <b>Parkinsons Disease</b><br>Nov 02-03, 2017 Chicago, USA                        |
| 2 <sup>nd</sup> International Conference on <b>Applied Chemistry</b><br>Oct 30-Nov 01, 2017 Chicago, USA            | <b>HEMATOLOGY</b>  | 10 <sup>th</sup> World Congress on <b>Dementia</b><br>Dec 06-07, 2017 Atlanta, USA   |
| International Conference on <b>Plasma Chemistry and Plasma Processing</b><br>Nov 13-14, 2017 Vienna, Austria        | <b>The Blood Congress and Expo</b><br>Oct 23-24, 2017 Toronto, Canada  | <b>NURSING &amp; HEALTHCARE</b>  |
| 6 <sup>th</sup> World Congress on <b>Chemistry</b><br>Nov 13-15, 2017 Vienna, Austria                               | <b>IMMUNOLOGY</b>  | International Conference on <b>Tropical Medicine and Global Health</b><br>Sep 07-09, 2017 Edinburgh, Scotland                |
| <b>DENTISTRY</b>  | 8 <sup>th</sup> International Conference on <b>Clinical and Cellular Immunology</b><br>Oct 02-03, 2017 Toronto, Canada         | 8 <sup>th</sup> <b>European Breast Congress</b><br>Oct 19-20, 2017 Budapest, Hungary   |
| 33 <sup>rd</sup> International Conference on <b>Dental Health</b><br>Oct 02-04, 2017 Toronto, Canada                | Annual Immunology Congress<br>Oct 23-25, 2017 Paris, France  | 43 <sup>rd</sup> <b>World Nursing Education Conference</b><br>Nov 09-10, 2017 New Orleans, USA                               |
| <b>DERMATOLOGY</b>  | 4 <sup>th</sup> International Conference on <b>Neuroscience &amp; Neuro-Immune Congress</b><br>Sept 18-19, 2017 Dallas, USA    | 5 <sup>th</sup> International Congress on <b>Primary Health Care &amp; Family Medicine</b><br>Nov 06-07, 2017 Madrid, Spain  |
| <b>World Dermatologist Summit</b><br>Oct 30-31, 2017 Toronto, Canada  | <b>INFECTIOUS DISEASES</b>   |  |
| <b>DIABETES &amp; ENDOCRINOLOGY</b>   | 5 <sup>th</sup> Annual Congress on <b>Bacteriology</b><br>Oct 16-17, 2017 Rome, Italy  |  |
| 6 <sup>th</sup> International Conference on <b>Endocrinology and Metabolism</b><br>Nov 06-08, 2017 New Orleans, USA | 8 <sup>th</sup> International Conference on <b>Infectious and Inflammatory Diseases</b><br>Sep 07-08, 2017 Edinburgh, Scotland |  |

# Global Assembling of Academicians, Researchers, Scholars & Industry to disseminate and exchange information at 200+ Allied Academies Conferences

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|--|---|
| <b>NUTRITION &amp; OBESITY</b>   | 7 <sup>th</sup> World Congress on<br>Hospital and Clinical Pharmacy<br>Dec 14-16, 2017 Rome, Italy  |
| World Congress on <b>Advances in Nutrition, Food Science &amp; Technology</b><br>Sep 11-12, 2017 Edinburgh, Scotland                       | <b>PHYSICAL THERAPY REHABILITATION</b>  |
| International Vitamins Summit<br>Sep 18-19, 2017 Dallas, USA   | 4 <sup>th</sup> Euro-Global Physiotherapy Congress<br>Dec 14-15, 2017 Rome, Italy   |
| International Malnutrition Summit<br>Sep 18-19, 2017 Dallas, USA   | <b>PHYSICS</b>  |
| International Obesity Summit<br>Oct 19-21, 2017 Toronto, Canada  | International Conference on<br><b>Magnetism and Magnetic Materials</b><br>Oct 09-10, 2017 London, UK  |
| <b>ONCOLOGY &amp; CANCER</b>   | International Conference on<br><b>Lasers, Optics &amp; Photonics</b><br>Sep 20-22, 2017 Toronto, Canada   |
| International Conference on<br><b>Cancer Biology &amp; Therapeutics</b><br>Sep 21-22, 2017 Dallas, USA                                     | <b>PSYCHIATRY</b>   |
| Gynecologic Oncology Congress<br>Oct 05-06, 2017 Las Vegas, USA  | International Conference on<br><b>Psychopharmacology</b><br>Sep 04-05, 2017 Paris, France   |
| World Congress on<br><b>Preventive Oncology</b><br>Oct 05-06, 2017 Las Vegas, USA  | 4 <sup>th</sup> International Conference on<br><b>Mental Health and Primary Care</b><br>Oct 16-17, 2017 Toronto, Canada                           |
| International Oncology Summit<br>Oct 23-24, 2017 Toronto, Canada   | 26 <sup>th</sup> World Congress on<br><b>Psychiatry and Psychiatric Disorders</b><br>Nov 02-03, 2017 Chicago, USA                                 |
| World Cancer & Immuno Therapeutics<br>Sep 27-28, 2017 Chicago, USA   | <b>SURGERY</b>  |
| International Obstetricians and Gynaecologists<br>Summit Oct 19-21, 2017 Toronto, Canada   | 7 <sup>th</sup> International Conference and Expo on<br><b>Cosmetology, Trichology &amp; Aesthetic Practices</b><br>Oct 26-27, 2017 Paris, France |
| International Conference on <b>Oncology and Therapeutics</b><br>Oct 30-Nov 01, 2017 Chicago, USA   | International Conference on<br><b>Family Medicine and Family Physicians</b><br>Oct 16-18, 2017 Toronto, Canada                                    |
| <b>OPHTHALMOLOGY</b>   | International Surgery conference<br>Oct 25-26, 2017 Toronto, Canada   |
| International Conference on<br><b>Ocular Pharmacology</b><br>Dec 07-08, 2017 Madrid, Spain   | International ENT (EAR, NOSE, THROAT)<br>Conference<br>Nov 09-10 New Orleans, USA   |
| <b>PATHOLOGY</b>   | International Conference on<br><b>Otolaryngology</b><br>Nov 09-10 New Orleans, USA  |
| World Conference on<br><b>Veterinary Pathology</b><br>Oct 16-17, 2017 Toronto, Canada  | International Plastic Surgery Conference<br>Dec 06-07, 2017 Sao Paulo, Brazil   |
| <b>PEDIATRICS</b>  | <b>TOXICOLOGY</b>   |
| 10 <sup>th</sup> American Pediatric Healthcare Congress<br>Sep 20-22, 2017 Toronto, Canada   | International Conference on<br><b>Toxicology and Clinical Pharmacology</b><br>Dec 14-16, 2017 Rome, Italy   |
| 2 <sup>nd</sup> Pediatric Infectious Diseases Congress<br>Sep 20-22, 2017 Toronto, Canada  | International Conference on<br><b>Toxicology and Pharmacology</b><br>Nov 01-02, 2017 Toronto, Canada  |
| Global Pediatric Oncology Congress<br>Nov 06-07, 2017 New Orleans, USA   | <b>VACCINES</b>   |
| <b>PETROLEUM</b>   | Global Vaccines & Vaccination Summit<br>Oct 02-04, 2017 Vancouver, Canada   |
| 8 <sup>th</sup> Annual Congress on<br><b>Petroleum Refinery and Safety</b><br>Sep 28-29, 2017 London, UK                                   | World Congress and Exhibition on<br><b>Vaccines, Vaccination &amp; Immunization</b><br>Nov 16-17, 2017 Vienna, Austria                            |
| 9 <sup>th</sup> International Conference on<br><b>Petroleum Geology and Petroleum Industry</b><br>Nov 13-14, 2017 Vienna, Austria          | <b>ZOOLOGY</b>  |
| <b>PHARMACEUTICAL SCIENCES</b>   | International Conference on<br><b>Applied Zoology</b><br>Sep 18-19, 2017 Toronto, Canada  |
| Global Neuropharmacology and<br><b>Neurochemistry Congress</b><br>Oct 02-04, 2017 Las Vegas, USA   | International Conference on<br><b>Embryology</b><br>Nov 02-03, 2017 Chicago, USA  |
| International Clinical Trials Congress<br>Oct 16-18, 2017 Toronto, Canada  |   |
| International Congress on <b>Drug Discovery and Development</b><br>Oct 19-21, 2017 Phoenix, USA  |   |
| 6 <sup>th</sup> International Conference and Exhibition on<br><b>Pharmacology and Ethnopharmacology</b><br>Nov 16-17, 2017 Vienna, Austria |   |

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

# Advances in Nutrition, Food Science & Technology

September 11-12, 2017 Edinburgh, Scotland

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

# Advances in Nutrition, Food Science & Technology

September 11-12, 2017 Edinburgh, Scotland

Keynote Forum

Day 1

Nutrition World 2017





**Elizabeth Jeffery**  
University of Illinois, USA

### Controlling obesity-derived hepatic lipidosis and carcinogenesis through dietary broccoli

**D**iets rich in fat and sugar, often termed 'Western' diets, have become popular worldwide. Unfortunately, such diets result in an increase in body fat accumulation and development of nonalcoholic fatty liver disease (NAFLD), with the potential to lead to hepatocellular carcinoma (HCC), a cancer with very poor outcome. Brassica vegetable consumption, particularly broccoli consumption, has grown significantly in popularity within the United States and many other parts of the world. Studies report protection against many different cancers by dietary broccoli. However, liver cancer and even liver health in obesity has not been evaluated before our present study. We hypothesized that broccoli slows or prevents both NAFLD and HCC, in a model of mice fed a Western diet and treated with the hepatic carcinogen diethylnitrosamine (DEN). Male B6C3F1 mice received a powdered, control diet or a diet containing 19% lard and 31% sucrose, +/- 10% freeze-dried broccoli, wt:wt,

with weekly DEN, 45mg/kg i.e. for 6 weeks. Mice were terminated 6 months later, at 9 months of age. Broccolifed mice had lower hepatic triglycerides ( $P < 0.001$ ) and NAFLD scores ( $P < 0.0001$ ), associated with changes in several biomarkers supporting a correction in handling hepatic lipid metabolism. Hepatic neoplastic initiation and progression were both slowed. These findings suggest the need for a clinical study to evaluate the impact of broccoli and/or other brassica vegetables on liver health in general and hepatic handling of lipids in particular.

### Biography

Elizabeth Jeffery joined the University of Illinois in 1983 and has joint appointments in the Department of Food Science and Human Nutrition, Pharmacology (College of Medicine) and the Interdisciplinary Division of Nutritional Sciences. She performs research in the area of diet, bioavailability and disease prevention, with a focus on cancer prevention using whole foods, including broccoli. She has served as Program Director for a multi-State research program on bioactive food components, on committees for the National Academy of Science focused on safety and efficacy of dietary supplements. She has a PhD in Biochemistry from the University of London, England.

[ejeffery@illinois.edu](mailto:ejeffery@illinois.edu)



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

### Suppression of intestinally mediated diseases by consumption of polyphenol rich sorghum brans

**P**olyphenols may protect against intestinally mediated diseases such as obesity, type 2 diabetes, chronic inflammation and cancer by influencing the colonic bacteria and their metabolites. We demonstrated diet induced modifications to the microbiota and their metabolites in rodent models of disease and overweight humans. When sorghum brans containing 3-deoxyanthocyanins, condensed tannins or their combination were included in a purified diet, they almost completely prevented microbial shifts that occurred in rats given the polyphenol free diet. Microbiota changes with the purified diet were suggestive of a pro-inflammatory state. In animals challenged with dextran sodium sulphate to initiate colitis, sorghum bran diets mitigated intestinal inflammatory tone. This response may result from the retention of Bacteroidetes and inhibition of an increase in Firmicutes in rats consuming the control diet. The condensed tannins increased Akkermansia, a microbe considered protective against metabolic diseases including diabetes. In addition to affecting the microbiota, inclusion of condensed tannins also causes a shift from rapidly digestible starch to slowly

digestible and resistant starch in the diet, which likely contributed to a reduction in blood glucose levels that occurred after a meal. Similar changes in the microbiota and importantly, microbe derived plasma metabolites occurred in humans consuming a cereal containing condensed tannins. Finally, rats fed these sorghum brans had fewer early colon cancer lesions, and this was associated with changes in the expression of pro-inflammatory mediators and regulators of apoptosis induction. Overall, our data suggest the potential for polyphenol rich brans derived from sorghum to suppress multiple intestinally mediated chronic disease states that negatively affects millions of people around the world.

### Biography

Nancy D Turner is a Research Professor in the Nutrition & Food Science Department. Her research is focused on characterizing the mechanisms whereby dietary chemoprotective compounds mitigate colon carcinogenesis and inflammatory bowel disease, with special attention given to the interaction between colon microbiota and the colonocytes. She has published 69 peer-reviewed papers, 6 book chapters, and co-edited a book entitled "Potential Health Benefits of Citrus". She is the Director of PhD Training Program in Space Life Sciences and Co-Director of a Postdoctoral Training Program in Nutrition, Biostatistics and Bioinformatics. She serves on the editorial boards of Advances in Nutrition, Molecules, and Experimental Biology and Medicine.

[n-turner@tamu.edu](mailto:n-turner@tamu.edu)





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

# **Advances in Nutrition, Food Science & Technology**

September 10-11, 2018 Zurich, Switzerland

E-mail: [nutritionworld@alliedconferences.org](mailto:nutritionworld@alliedconferences.org); [nutritionconference@alliedconferences.org](mailto:nutritionconference@alliedconferences.org)

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

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## Scientific Tracks & Abstracts Day 1

Nutrition World 2017



**Food and Nutrition | Nutritional Science  
Nutrition and Health | Public Health  
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**Session Chair**  
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*Texas A&M University, USA*

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

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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**

King Faisal Specialist Hospital and Research Center, KSA

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.

rawansahr@hotmail.com

 Notes:

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

**M B Agieb**

Saudi German Hospital, KSA

**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.

mahdiet1972@hotmail.com

 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>

<sup>1</sup>University of Guelph, Canada

<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.

bbohrer@uoguelph.ca

 Notes:



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

Peter F Surai<sup>1,2</sup> and Vladimir I Fisinin<sup>3</sup>

<sup>1</sup>Feed-Food Ltd, UK

<sup>2</sup>Moscow State Academy of Veterinary Medicine and Biotechnology, Russia

<sup>3</sup>All-Russian Institute of Poultry Husbandry, Russia

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.

psurai@feedfood.co.uk

 Notes:

## 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

<sup>2</sup>Osaka Sanitary Co., Japan

<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.

k\_shimo@okinawa-ct.ac.jp

 Notes:

## **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>

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

<sup>2</sup>National Institute of Technology, Kumamoto College, Japan

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.

y.higa@okinawa-ct.ac.jp

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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**

Angela Zinnai, Chiara Sanmartin, Isabella Taglieri, Gianpaolo Andrich, Anita Nari, Mike Quartacci, Cristina Sgherri and Francesca Venturi

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.

angela.zinnai@unipi.it

 Notes:

## 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

Nanjing University of Chinese Medicine, China

**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.

amirfi@yahoo.com

 Notes:

## 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>

<sup>1</sup>Meijo University, Japan

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

<sup>3</sup>Kobe University, Japan

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.

minato@meijo-u.ac.jp

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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>

<sup>1</sup>University of Kent, UK

<sup>2</sup>Moscow State Academy of Veterinary Medicine and Biotechnology, Russia

<sup>3</sup>Biotrof+ Limited, Russia

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.

m.romanov@kent.ac.uk

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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.

mainora81@yahoo.com

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**Peter F Surai**  
Feed-Food Ltd, UK

### Microbiome and antioxidant system of the gut in chicken: Food for thoughts

The microbiome of the gastrointestinal tract in poultry is one of the major factors affecting health of birds (especially the immune system), their productivity and period of productive use. Furthermore, pathogens and agents of food toxicoinfections in humans (e.g. campylobacteriosis) may result from contamination of eggs and meat with bacteria that are normal in the gastrointestinal tract of poultry. There is also an antioxidant-prooxidant balance in the gut that interacts with microbial population and determines gut integrity and inflammation. Our studies indicate that superoxide dismutase and heat shock proteins are major protective mechanisms in the gut, while mycotoxins and oxidized fat in the diet represent negative effectors of gut health. We find that by using vitagene-activating supplements it is possible to improve feed conversion ratio in growing chickens and layers due to improvement of gut antioxidant/redox status and health. Intestinal microflora impact on egg production and meat quality has not been studied well using molecular genetics and genomic techniques in relation to feed additives (e.g. probiotics, anti-stress additives, etc.) that should be safe for human. Neoteric metagenomic profiling of bacterial communities using T-RFLP, RT-PCR and NGS technology provides a powerful toolbox for monitoring intestinal microflora at all stages of chicken development and performance. Combined with gene expression analysis in the chicken guts, microbiome studies can aid in understanding of

nutritional, microbiologic and genetic factors forming poultry health and productivity, and in improving biosafety and quality of poultry products. It seems likely that pathogenic bacteria and prooxidants are on one side of the balance while antioxidants, probiotics and normoflora are on the other side of the balance determining chicken health and their productive and reproductive performance. Understanding this balance is a new promising direction of the research.

*This research 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 (Calabrese et al., 2007-2016) 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.

[psurai@feedfood.co.uk](mailto:psurai@feedfood.co.uk)

**Co-Authors: Ivan I Kochish<sup>2</sup>, Darren K Griffin<sup>3</sup>, Ilya N Nikonov<sup>4</sup> and Michael N Romanov<sup>2,3</sup>**

<sup>2</sup>Moscow State Academy of Veterinary Medicine and Biotechnology, Russia

<sup>3</sup>University of Kent, Canterbury, UK

<sup>4</sup>BIOTROPH+ Ltd, Russia



**Benjamin M Bohrer**  
University of Guelph, Canada

### Density and value of nutrients in plant-based food products when compared with traditional animal-based food products

In recent years, consumers are becoming more diverse when choosing foods to consume. Specifically, there is an increase around the world in the population and percentage of people who choose to consume diets without or limited in animal-derived foods. Utilization of non-meat foods as a complete source of protein, vitamins, and minerals warrants careful consideration. This research focused on 1) comparing nutrient density, nutritional value, and cost of nutrients of meat products and non-meat foods high in protein and 2) comparing nutrient density, nutritional value, and cost of nutrients of dairy milk and plant-based milk alternatives. Twenty-five meat products (beef, pork, lamb, and poultry), six fish products, and eighteen non-meat foods were compared for nutrient composition. Seven dairy-derived milks and six plant-based milk beverages were compared for nutrient composition. Nutrient composition information was used to assign value based on nutrient density. Nutrient cost was expressed in nutrients available per US dollar and prices were assessed from the USDA economic research service and the USDA agricultural marketing service when available,

and with a marketplace assessment when information was unavailable otherwise. Energy, protein, amino acid composition, total fat, saturated fat, cholesterol, vitamin B12, sodium, phosphorus, iron, and zinc content in protein-rich foods and milk beverages were analyzed for nutrient density and value. Individual comparisons for the cost of nutrients was generated from this dataset that will enable further research and categorization of high protein foods. Careful consideration needs to be made when replacing meat in the diet with non-meat foods, because most non-meat foods contain only 20 – 60% total protein density on an equal (raw, unprepared) serving size basis. Likewise, consideration needs to be made when replacing dairy milk with plant-based milk alternatives, as plant-based milk alternatives can range from 5 to 70% of the protein density of whole cow milk.

### Biography

Benjamin M Bohrer is a Meat Scientist with training and expertise in animal and food sciences. He recently 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.

[bbohrer@uoguelph.ca](mailto:bbohrer@uoguelph.ca)



## M Usman

Pakistan Agricultural Research System, Pakistan

**Major food nutrients and food chemistry is the most powerful tool for the health, reduction in global poverty and hunger in the developing countries of the world like South Asia**

The aim of presentation consists of major food nutrients, food chemistry and poverty alleviation were studied and reported that food is the basic need of our life and the food chemistry deals with the production, processing, preparation, and utilization of food like plants and animals which are the main source of food and food nutrients. Similarly, the basic food chemistry deals with three major food components such as carbohydrate, lipids and protein which are found in plants and animals cells. It is also called as the food science. Food carbohydrates include sugar, starches and fibres, lipids include fats, oil, waxes and cholesterol. Protein is very important component of food and necessary for the life of human being. All the components are the basic source of energy. In the light of above study, food chemistry and nutrition are not only the basic need of food but also fulfills the maximum requirements of human beings from the integrated agricultural products of agro based industries like livestock and dairy development, poultry, aqua cultural, apiculture, crops production, fruits, vegetable, seed

industries and processing plant. Similarly, agro based industries, food science, food chemistry and nutrition absorbs millions of technical and non-technical people like doctors, engineers, agricultural scientist, technical experts etc thus generating source of income, create employment as well as reduction of global poverty and hunger in the World. It is concluded that agricultural, food science, food chemistry and nutrition are the basic need of our lives which in turn generate income, create employment, consequently reduction in poverty and hunger. It was also concluded that in the absence of it life is almost impossible.

### Biography

M Usman was a Former Director General of Agricultural Research System, Government of Pakistan who retired from service after a spotless career of about 35 years with senior level experience on research and development of agricultural industry with regard to Food Chemistry, Food science and Nutrition, renewable energy, sustainable agriculture of oil seed, cereal, fruits, vegetable and other cash crops. He has presented paper in FCF, Geneva. He is basically an Agricultural Scientist with specialization in agriculture in Switzerland and food chemistry working as plant breeder with regard to the yield and quality of various agricultural crops as well as nutrition. He has also worked on Biosciences of lipids, food legumes crops and Bio-energy. He is being a scientist, has released several oil seeds varieties, presented and published research papers on various oil seeds, and renewable energy in different conferences like Geneva. He established "Prominent Agro Based Industries SDN BHD" in Malaysia and aims to work on integrated agricultural project like livestock and dairy development, renewable energy etc. His research area focuses on Food & Nutrition.

[usmankhan1949@yahoo.com](mailto:usmankhan1949@yahoo.com)



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## Scientific Tracks & Abstracts Day 2

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**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

Michael N Romanov<sup>1,2</sup>, Georgy Yu Laptev<sup>3</sup>, Ilya N Nikonov<sup>3</sup>, Larisa A Ilyina<sup>3</sup>, Natalia I Novikova<sup>3</sup>, Olga V Barkova<sup>4</sup>, Darren K Griffin<sup>1</sup>, Ivan I Kochish<sup>2</sup>, Vladimir I Smolensky<sup>2</sup>, Aleksandr N Panin and Mikhail N Shaposhnikov

<sup>1</sup>University of Kent, Canterbury, UK

<sup>2</sup>Moscow State Academy of Veterinary Medicine and Biotechnology, Russia

<sup>3</sup>BIOTROF+ Ltd, Russia

<sup>4</sup>Russian Research Institute of Farm Animal Genetics and Breeding, Russia

**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.

*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 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.

m.romanov@kent.ac.uk

 Notes:

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

Naguib A bdelreheim  
University of Sharjah, UAE

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.

Naguib.reheim@uhs.ae

 Notes:

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

Irit Dvir<sup>1</sup>, Hila Tarazi<sup>2</sup> and Shoshana Malis Arad<sup>2</sup>

<sup>1</sup>Sapir Academic College, Israel

<sup>2</sup>Ben-Gurion University of the Negev, Israel

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.

iritd@sapir.ac.il

 Notes:



## 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  
National Institute of Nutrition, India

**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, SBCL, IDA, IIS and several other nutrition relevant research bodies.

sreenu.nin@gmail.com

 Notes:

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

Haleama Al Sabbah and Moza Alketbi  
Zayed University, UAE

**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.

haleama@hotmail.com

 Notes:

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

Marjan Bazhan, Nastaran Keshavarz-Mohammadi, Naser Kalantari, Hedayat Hosseini and Hamid Alavi-Majd  
Shahid Beheshti University of Medical Sciences, Iran

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.

marjanbazhan@sbm.ac.ir

 Notes:

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

M M Papamichael<sup>1</sup>, Ch Katsardis<sup>2</sup>, D Tsoukalas<sup>3</sup>, B Erbas<sup>1</sup> and C Itsiopoulos<sup>1</sup>

<sup>1</sup>La Trobe University, Australia

<sup>2</sup>National & Kapodistrian University of Athens, Greece

<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.

sassipap@hotmail.com

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Website: [nutrition-foodtechnology.alliedacademies.com](http://nutrition-foodtechnology.alliedacademies.com)





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## 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.

sebnemkurhan@ibu.edu.tr

## **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.

[anita.nari@agr.unipi.it](mailto:anita.nari@agr.unipi.it)

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

# Advances in Nutrition, Food Science & Technology

September 11-12, 2017 Edinburgh, Scotland

# Posters

Nutrition World 2017



## **Polycyclic aromatic hydrocarbon binding characteristics of *Lactobacillus rhamnosus* NRRL B-442**

**Sebnem Kurhan and Ibrahim Cakir**

Novel Food Technologies Development-Application and Research Center, Turkey

Lactic acid bacteria are the co-habitant group of human intestinal microbiota. As intestinal tract is the last stop of genotoxins, before incorporating into the circulating system, these microorganisms play a key role. *Lactobacillus rhamnosus* NRRL B-442 is the most known probiotic which has a great potent to adhere intestinal mucosal cells. This study is aimed to reveal the decrease of sixteen polycyclic aromatic hydrocarbons (PAHs) content by *Lactobacillus rhamnosus* using HPLC (High-performance liquid chromatography) assay. At 0, 3, 6, 12 and 24 hour samples were centrifuged, supernatants collected and freezed at -24°C until extraction. Liquid-liquid extraction was applied and analyzed with HPLC-

DAD. During incubation, *L. rhamnosus* cells vitality was checked using plate count method. The research indicated, *L. rhamnosus* can keep alive and reduce efficiently PAHs from artificially contaminated PBS (Phosphate-buffered saline) time-dependently and the most mutagenic compound of PAHs, Benzo[a]pyrene was completely removed from the medium both 0h and 24h.

### **Biography**

Sebnem Kurhan obtained her Bachelor's Degree at Uludag University, Turkey in Food Engineering and completed her Master of Science program in Department of Food Engineering, Ankara University, Turkey. After a short experience in private sector, she started to work as a specialist and she started her PhD at Abant Izzet Baysal University, Turkey during 2013. 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 gave 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.

sebnemkurhan@ibu.edu.tr

 Notes:

## **Chemical and sensory characterization of grape and wine “GRECHETTO”: Evaluation of technological potentialities as a function of the harvest date**

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

**G**rape harvest time is one of the most fundamental aspects that have influence on the future of wine quality. This research project aims at investigating the influence of different ripening stages on berry quality (cv Grechetto G5) and on the sensorial expression of the obtained wine. The same grapes, harvested in three different scheduled dates, were characterized by a structural, compositional and sensorial point of view as well as the obtained wine. To individuate the best combination ripening degree of grape/style of wine, the grapes harvested in different dates are processed separately. First period wine showed a good freshness and acidity together with a sensory

profile that could represent a good basis for a sparkling wine. Second harvest wine was sensory complex and structured, with good fatness/roundness perception and harmony, showing more than the others, typical Grechetto scents such as citrus, broom, acacia flowers and tropical fruits, especially pineapple. Third harvest wine revealed to be notable for its chemical and sensory characteristics, especially exhibiting valuable complexity, overall structure and intensity and combining a good acidity with a fine flavour. Wine produced from riper grapes could therefore be usefully employed either as meditation or dessert wine.

### **Biography**

Anita Nari has graduated in Food Biosafety and Quality. She is a PhD student (II year) in Agriculture, Food and Environment at the University of Pisa, Italy. 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, products, qualification, characterization and monitoring of food technologies.

[anita.nari@agr.unipi.it](mailto:anita.nari@agr.unipi.it)

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## Comparison between Sangiovese grapes composition and quality of the wine aged in oak barrels obtained with or without early defoliation

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

Leaf removal (defoliation) in the fruiting zone is a canopy management practice which could be applied in vineyard at any time, from fruit set to veraison, to enhance air circulation and light penetration in dense foliage. Grape composition and its technological characteristics, together with the values of the physical and chemical parameters adopted in winemaking, are the most fundamental aspects which can influence on the future of wine sensory quality and composition. To verify the usefulness of early defoliation as a tool to reduce cluster compactness and yield and improve grape composition and wine quality, a research was carried out in a Sangiovese vineyard located in Tuscany. Two different methods for early defoliation,

consisting of removal of all leaves from the first 5-7 nodes, was tested close around flowering: manual and pseudo-mechanical. Non-defoliated vines were considered as a control. The effect of the canopy management method adopted on yield, grape composition and sensorial expression of grapes was evaluated following the methods reported in previous works, as well as the evolution of wines obtained by defoliated grapes in the previous two harvest seasons, as a function of aging in oak barrels. Early defoliation, especially the manual one, reduced cluster compactness and yield but increased total phenolic concentration in berries. However, the differences tend to decrease during wine aging.

### 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.

[anita.nari@agr.unipi.it](mailto:anita.nari@agr.unipi.it)

 Notes:

## **Proteins, catabolism, and sepsis: A literature review**

**Macarena L Fernandez Carro**  
University of Manchester, UK

**S**epsis and its progression, septic shocks are multi-organ failures caused by a complication of an infection. These cases are characterized by an increase in the nutritional requirements and this leads to a catabolic state. This shows a negative nitrogen balance which demonstrates the use of body muscle is metabolic substrate for energy production. This fact leads to a malnourished patient with increased mortality rates. Nutrition in the septic patient is a complicated topic not only for the acute component of the disease but also due to the location and the nutritional misconceptions of the medical team. Investigation in this

field is very limited and mainly specific amino acids have been studied but a complete nutritional approach to the patient could lead to a correction in the catabolic state. By correcting the catabolism, we would not only improve the nutritional status of the patient but also improve and/or correct the metabolism. This could lead to appropriate metabolic pathways and better outcomes.

### **Biography**

Macarena L Fernandez Carro is qualified as a Nurse by the University of the Basque Country in 2014 and already possessed an interest in the nutritional management of patients. Obtaining a Master of Science in Nutrition for Health promotion while working as an Intensive Care Nurse triggered her passion for the septic patient. Now, she is studying Medicine at the University of Manchester while working in ITU units across the North West of England. She is focused on improving nutritional management from a nursing perspective and she is involved in education and training in this field.

macarenafc92@gmail.com

 Notes:

## **Associations of vitamin D intake and other risk factors with 25-hydroxyvitamin D concentrations in ethnic minority adults living in the UK**

**Mona S Almujaaydil**  
Manchester Metropolitan University, UK

In recent years, there has been an increase in the rate of vitamin D deficiency among ethnic minority groups living in UK due to reduced sun exposure and low dietary intake of vitamin D. It therefore follows that the aim of this study is to determine diet and lifestyle factors adopted by different ethnic minority adults from Manchester, that are associated with an increased risk of vitamin D deficiency. A self-reported questionnaire was used to assess vitamin D intake, sun exposure behaviours and lifestyle factors. Vitamin D status was assessed by measuring serum 25(OH)D concentrations. Overall, seventy-four participants have had their vitamin D status checked and have completed the study. Among study participants, serum 25(OH)D level was 34.2, 28.7 and 29 nmol/l for Arab, South Asian and Black African groups, respectively. The mean vitamin D intake estimated by the food frequency questionnaire was 2.31  $\mu$ /d for Black Africans, followed by

South Asians (1.75  $\mu$ /d) while the lowest vitamin D intake was found to be among Arabs. The average of the usual sun exposure was approximately 90 minutes a day for whole samples. Other possible risk factors for vitamin D deficiency included low use of supplements (81%) being overweight or obese (60% Arabs and 46% South Asians); the percentage of smoker and alcohol intake were higher among Black Africans compared with other ethnic groups (45%). Ethnic differences in diet, clothing, and religious customs might be responsible for the higher prevalence of vitamin D deficiency among minority ethnic adults especially Arabs and South Asians. Further, research focusing on the barriers to seek health is conducted among this at-risk population, to develop effective policy interventions and awareness campaigns.

### **Biography**

Mona Almujaaydil is currently pursuing PhD in Human Nutrition at Manchester Metropolitan University, Manchester, United Kingdom. She has completed her Master's Degree in the Field of Human Nutrition from 2010-2011 at Heriot-Watt University and Bachelor of Science in the field of Nutrition and Food Science from King Abdul Aziz University, Saudi Arabia.

13161463@stu.mmu.ac.uk

 Notes:

## Mediterranean diet and GERD symptoms: A case control study in Lebanese adults

Jacqueline H Doumit<sup>1</sup>, Antoine Aoun<sup>1</sup> and Mary Joe Youssef<sup>2</sup>

<sup>1</sup>Notre Dame University-Louaize, Lebanon

<sup>2</sup>Holy Spirit University of Kaslik, Lebanon

**Background:** The prevalence of gastro esophageal reflux disease (GERD) is increasing worldwide and its symptoms are associated with several risk factors such as diet and stress. Our aim was to assess the association between GERD symptoms and both lifestyle and dietary factors among adult men and women in Lebanon, a Mediterranean country with specific characteristics.

**Methods:** This case control study was carried between January and March 2016. A convenient sample of 264 adults was equally divided into GERD group and control group. Socio-demographic, dietary and lifestyle data were collected from a face-to-face interview performed by a trained local dietician.

**Results:** GERD symptoms were associated with high body mass index ( $p < 0.001$ ), smoking ( $p < 0.001$ ), family history of GERD ( $p < 0.001$ ), low physical activity ( $p = 0.01$ ), and high stress level ( $p = 0.02$ ). These symptoms were also associated with the following dietary habits: eating large

volume meals ( $p < 0.001$ ), irregular meal pattern ( $p < 0.001$ ), eating out ( $p < 0.001$ ), rapid eating (in less than 10 min) ( $p < 0.001$ ), late-evening meals (short before bed-time) ( $p = 0.001$ ) and eating between meals ( $p < 0.001$ ). Heartburn was the most common symptom. Coffee (OR, 5.81; 95% CI, 1.93-17.45) and carbonated beverages (OR, 3.09; 95% CI, 1.31-7.30) were significantly correlated with GERD symptoms. Moreover, coffee emerged as the strongest predictor for heartburn, globus sensation and hoarseness, while carbonated beverages were the strongest risk factor for dyspepsia. Among several Lebanese traditional dishes, only labneh with garlic (OR, 3.71; 95% CI, 1.72-8.03) and pomegranate molasses (OR, 2.86; 95% CI, 1.39-5.86) were associated with GERD symptoms aggravation.

**Conclusion:** Some lifestyle factors and components of the Lebanese Mediterranean diet may increase the symptoms of GERD.

### Biography

Jacqueline H Doumit is currently an Associate Professor in the Faculty of Nursing and Health Sciences at Notre Dame University-Louaize (NDU) Lebanon, where she has been teaching biology, nutrition and biochemistry courses since 1999. Her research interests are largely in food quality, nutrition, the well-being of adults and epidemiological research on elderly.

[jdoumit@ndu.edu.lb](mailto:jdoumit@ndu.edu.lb)

 Notes:



## The warning of the consumers about the effect of food synthetic dyes on children

**Saoud Zahia**  
Pasteur Institute of Algiers, Algeria

Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood disorders. It can continue through adolescence and adulthood. Symptoms include difficulty staying focused and paying attention, difficulty controlling behavior, and hyperactivity (over-activity). For more than 30 years, scientists have examined the effect of food additives, especially food colorings on children's behavior which gives rise to much controversy. The debate took birth when Dr. Benjamin Feingold has established a link between food dyes and hyperactivity in children in 1982. According to his hypothesis, some children are genetically predisposed to hyperactivity. He reported a dramatic improvement in the behavior of 50% of children who adopted a diet with no dyes, artificial flavorings or salicylates.

The impact of this distant controversy continues to influence parents' opinions about the effect of food additives on children's behavior. A study published in 1987 highlighted the need for pediatricians have to manage the growing manifestations of anxiety aroused by the issue of food among parents. The author found that many parents have learned the possible effect of additives in the media. In Algeria the synthetic dyes regulation exists in Algeria. The nonexistent is a regulation that requires a health warning on the labels.

The aim of this project is to allow a new interdepartmental

decree between the Department of Health and the Department of Trade. It will require labeling of products containing synthetic dyes that can have adverse effects by adding the mention "may have an adverse effect on activity and attention of the children".

The aim of our study is to know if the synthetic food dyes have an impact on the lifestyle and the children's functioning. It will allow us to understand the risks associated with the use of these dyes. For this we have chosen to work on hyperactive children rather than the healthy ones because of the effect of the interaction which will be more apparent on the hyperactive children who have a lack of dopamine "induced hyperactivity".

The immediate purpose of the study is to raise public awareness about the effect that can have synthetic food dyes on children. We are based on hyperactive children because the effects of dyes are more noticeable than in "healthy" children, but our goal is to protect all children.

The overall objectives are to never put on the market a food product is its source before it is tested and labeled and to create a new decree to ban the synthetic dyes which have bad effects on our health.

### Biography

Saoud Zahia is a pharmacist master assistant in hydrology, environment and nutrition. He is working at the faculty of medicine of Algiers in the department of pharmacy and Institute Pasteur of Algeria which it depends on the network institute Pasteur of Paris. He worked as a quality manager for 4 years and at the moment he joined the laboratory of water, food and environment of the Pasteur Institute of Algeria.

IPAsaoud@yahoo.fr & zsaoud@pasteur.dz

 Notes:

## Acceptability, nutritional and non-nutritional components of rice [*Oryza sativa* (L.)] and pigmented corn [ZEA MAYS (L.)] grits mix

Theresa Krista B Jolejole

University of the Philippines Los Baños, Philippines

Three rice varieties namely, Lian (NSIC Rc98), Tubigan 18 (NSIC Rc222), and Mabango 3 (NSIC Rc218) were combined with Camotes (CGUARD-N68) corn grits. The gel consistency of the samples ranged from 28 to 59 mm (hard to medium). On the other hand, the gelatinization temperature for Mabango 3 was low (<70°C) and intermediate (70°- 74°C) for Tubigan 18, Lian, and Camotes. Cooking water, cooking time, and height increase were directly proportional to the amount of corn. The water absorption index (WAI) and water solubility index (WSI) increased with greater amounts of corn. Sensory evaluation results revealed that Lian-Camotes (90:10, 80:20, 70:30), Tubigan 18-Camotes (90:10, 80:20, 70:30), and Mabango 3-Camotes (90:10, 80:20,70:30) were the top nine most acceptable mixtures. Proximate

compositions between raw and cooked samples were not significantly different from each other. Minerals, essential amino acids, phytochemicals, and antioxidant capacity significantly decreased after cooking. Starch and amylose significantly increased after cooking. On the other hand, amylopectin decreased after cooking. Correlation analysis also found that amylopectin has a strong positive correlation with Estimated Glycaemic Index (EGI). Based on CODEX Alimentarius, EAR (Estimated Average Requirements), and RENI (Recommended Energy and Nutrient Intakes), rice and pigmented corn grits mix is a good source of protein, zinc, phosphorus, and energy and thus, can contribute to food and nutrition security.

### Biography

Theresa Krista B Jolejole has completed her Master of Science in the Field of Applied Nutrition from University of the Philippines, Philippines and Bachelor of Science in the field of Nutrition from University of the Philippines, Philippines. She worked as Science Research Analyst at National Institute of Molecular Biology and Biotechnology – UPLB, Philippines during the year of September 2014-February 2016.

theresakrista@gmail.com

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## Role of aged crushed *Allium Sativum L.* on systemic inflammatory markers in patients with Syndrome-X

Prema Ram Choudhary and Rameshchandra D Jani  
C U Shah medical college, India

**S**ndrome-X (Metabolic syndrome) comprised a cluster of risk factors described by abdominal obesity, hypertension, atherogenic dyslipidemia, hyperglycemia, prothrombotic and proinflammatory conditions. Raw *Allium sativum L.* (garlic) homogenate has been explained to diminished cardiovascular risk factors in animal model; however, no specific studies have been conducted to appraise the role of aged crushed *Allium sativum L.* on components and inflammatory markers in syndrome-X. Hence present study was intended to explore the role of aged crushed garlic on systemic inflammatory markers in patients with syndrome-X. A total of 40 patients with syndrome-X were enrolled from diabetic's centre of Medical College Bikaner, India. They were endure treatment with 100 mg/kg body weight aged crushed garlic two times a day with usual diet for four weeks and their anthropometric as well as serum biochemical variables were measured both at the beginning and end of the study. Homeostasis model assessment for insulin resistance (HOMA-IR) was calculated. Statistical analysis was done using IBM: SPSS version 20, and student paired-t test was used to compare variables

before and end of treatment of aged garlic preparation. Aged crushed garlic significantly abridged variables of syndrome-X including waist circumference ( $p < 0.05$ ), systolic and diastolic blood pressure ( $p < 0.001$ ), serum triglycerides ( $p < 0.01$ ), fasting blood glucose ( $p < 0.0001$ ), tissue necrosis factor- $\alpha$  (TNF- $\alpha$ ) ( $p < 0.05$ ), serum leptin ( $p < 0.01$ ), interleukin-6 (IL-6) ( $p < 0.001$ ), high sensitivity C-reactive proteins (hs-CRP) ( $p < 0.01$ ) and Homeostatic model of insulin resistance (HOMA-IR) ( $p < 0.001$ ) whereas significantly increased serum high density lipoprotein cholesterol ( $p < 0.0001$ ) and adiponectin levels ( $p < 0.01$ ). Moreover, there was no significant difference found in body mass index ( $p > 0.05$ ) of patients with syndrome-X after consumption of age crushed garlic for 4 weeks. Age crushed garlic has valuable effects on systemic inflammatory markers in patients with syndrome-X thus it can be used as a supplementary remedy for prevention and treatment cardiovascular disorders in patients with metabolic syndrome.

### Biography

Prema Ram Choudhary is an assistant professor in the Department of Physiology at C. U. Shah Medical College, Gujarat, India and he is interested in the fields of haematology, herbal medicine, metabolic syndrome, endocrinology, cardio-respiratory physiology, and metabolism and endocrinology. Moreover, published more than 35 original research publications in international journal with high impact factor. He has completed his Masters in Medical Physiology from 2001-2004 at Dr. S.N. Medical College, Jodhpur, India and B.Sc in Biology from 1996 – 1999 at Govt College Sirohi, India.

prema5252@gmail.com

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## Serum ferritin level in children and adolescents from a Brazilian quilombola community are associated with daily coffee intake

Ana Gabriella P Alves<sup>1</sup>, Beatriz A Carvalho<sup>1</sup>, Renata Carvalho dos Santos<sup>2</sup> and Maria S Silva<sup>1</sup>

<sup>1</sup>Federal University of Goiás, Brazil

<sup>2</sup>State University of Goiás, Brazil

**Statement of the Problem:** coffee intake is a habit in several countries, including Brazil, and in all age groups. There is evidence that high daily intake of coffee can reduce iron absorption in the duodenum, and can impair the growth and development of children and adolescents. In relation to children and adolescents from African continental ancestry group, coffee consumption can be even more harmful because of their inadequate nutritional status due to low income. Therefore, the objective of this study was to associate the daily consumption of coffee with serum ferritin levels in children and adolescents from a Brazilian quilombola community.

**Methodology:** this cross-sectional study was carried out, in 2012, with 26 children and adolescents (10.46±4.69 years) from a quilombola community located in the Central-West region of Brazil. Blood sample was collected to obtain serum ferritin levels. The assessment of coffee consumption was carried out using the food frequency questionnaire, which contains 58 foods (including coffee).

Student's t-test for independent samples was used to evaluate the difference in serum ferritin levels between participants with and without daily consumption of coffee. P values <0.05 were considered significant. This research was approved by Research Ethics Committee of Federal University of Goiás, Brazil. Findings: Most of the participants were female (61.5%, n=16). The average serum ferritin level was 52.75±28.79 ng/mL, and 38.46% (n=10) of them consumed coffee at least once a day. Participants with daily coffee consumption had lower serum ferritin levels (p=0.012) (Table 1).

**Conclusion:** The daily consumption of coffee influenced negatively in serum ferritin levels in children and adolescents from the quilombola community of Brazil. Whereas iron is an important mineral in the stage of childhood and adolescence, this result suggests a greater control in coffee consumption among the participants for their growth and development not be affected.

### Biography

Ana Gabriella P Alves is a Nutritionist who graduated from the Federal University of Goiás, Brazil. She completed a Master's degree in Health Sciences (Faculty of Medicine/Federal University of Goiás, Brazil) and is currently a PhD student in the same program. She also concluded a Postgraduate study in Sports Nutrition and Functional Clinical Nutrition. She is a co-author of two book chapters, related to Sports Nutrition, and is Anthropometrist ISAK Level 1. She is member of the Laboratory of Physiology, Nutrition and Health (College of Physical Education and Dance/Federal University of Goiás, Brazil).

anagabriela\_alves@hotmail.com

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Abstracts

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### **TRPV4 calcium-permeable channel is a novel regulator of oxidized LDL-induced Macrophage foam cell formation**

**Shaik O. Rahaman**  
University of Maryland, USA

**C**ardiovascular disease is the number one cause of death in developed world, and atherosclerosis, a chronic inflammatory arterial disease, is the most dominant underlying pathology. Macrophages are thought to orchestrate atherosclerosis by generating lipid-laden foam cells and by secreting inflammatory mediators. Emerging data support a role for a mechanical factor, e.g., matrix stiffness, in regulation of macrophage function and atherogenesis. We have obtained evidence that TRPV4, an ion channel in the transient receptor potential vanilloid

family and a known mechanosensor, is the likely mediator of oxidized low-density lipoprotein (oxLDL)-dependent macrophage foam cell formation, a critical process in atherogenesis. Specifically, we found that: i) genetic ablation of TRPV4 or pharmacologic inhibition of TRPV4 activity by a specific antagonist blocked oxLDL-induced macrophage foam cell formation, and ii) TRPV4 deficiency prevented matrix stiffness or scratch-induced exacerbation of oxLDL-induced foam cell formation. Mechanistically, we found that: i) plasma membrane localization of TRPV4 was sensitized to the increasing level of matrix stiffness, and ii) TRPV4 activity regulated oxLDL uptake but not its internalization in macrophages. Altogether, these findings identify a novel role for TRPV4 in regulating macrophage foam cell formation by modulating uptake of oxLDL.

srahaman@umd.edu

### **Enhancing dairy milk CLA by tailoring rumen dynamics through dietary manipulations**

**M. Aasif Shahzad**  
Scientific and Regulatory Affairs, USA

**C**onjugated linoleic acid (CLA) has been recognized to impart health benefits to human beings by supporting or manipulating health protecting mechanisms. Bovine milk is considered an important source of this valuable fatty acid; however, its synthesis by the dairy cow is influenced by multiple factors, among which dairy feed is one of them. Fabricating dietary nutrients to feed the dairy animal aimed to enhance its CLA has offered a tool to be used to synchronize the dietary, ruminal and cellular nutrient interaction and utilization to achieve higher CLA in milk. This article will underline how dietary feed Ingredients can alter rumen dynamics and milk biosynthesis to attain a higher CLA in dairy milk fatty acid profile. Studies indicate changes in milk CLA might be attributed to the diversity of fat sources and varying concentration of forage and concentrate. However, role of nutrients which

are degraded and / or undegraded in rumen can't be neglected. Feeding type of fat which doesn't break in rumen and certain amino acids which break and don't break in rumen are important tools to design milk fatty acid profile with higher CLA. Dietary fat may influence the bio hydrogenation phenomena in the rumen which has direct impact on milk fatty acid profile. Feeding type of protein which is not degraded in the rumen have been reported to enhance the milk CLA, however, this impact of dietary protein may be affected by composition and quantity of amino acids which don't break in the rumen. Biosynthesis of milk need precursors or nutrients which dairy Animal gets from blood which reflects the existence of an isotonic equilibrium between blood and milk. This abstract review and underline the dietary interventions aimed to synchronize dietary nutrients to tailor rumen dynamics towards synthesis of nutrients or their precursors for higher milk CLA and this nutritional avenue still awaits to be capitalized for better human nutrition.

aasifshah9@hotmail.com



## Bioactive fiber: Bioactivity of Cereal arabinoxylans in Relation to Their Sources and Structure

Weili Li<sup>1</sup>, Zhengxiao Zhang<sup>2</sup>, Jason Ashworth<sup>3</sup>, Andrew Fowell<sup>3</sup>, Qiuyu Wang<sup>3</sup> and Christopher Smith<sup>1</sup>

<sup>1</sup>University of Chester, Chester, UK

<sup>2</sup>Manchester Metropolitan University, UK

<sup>3</sup>Manchester Metropolitan University, UK

Arabinoxylans are major components of cereal cell walls and they occur at higher content in the by-products of milling, wheat brans, rich brans and rice hulls of dietary fibre than in wheat flour and rice. Arabinoxylans have been reported to have numerous health benefits in recent studies. This presentation will report our recent studies on effects of cereal arabinoxylan extracts with various molecular weights and structures on their human immunity modulation and anticancer activity in *in vitro* testing.

The extraction yield and structure of AXs varied with sources and extraction technologies. In this study, AXs were extracted from wheat flour pentosan with and

without xylanase treatment. In *in vitro* testing, nitric oxide (NO) secretion and inducible nitric oxide synthase (iNOS) expression of human immune cells of U937 induced by enzyme extracted AXs and water extracted AX were compared. The results show that AXs treatments not only enhanced NO production but also iNOS levels in U937 cells ( $P < 0.05$ ) compared to untreated cells. The enzyme-treated AXs with a higher proportion of low Mw AXs (1-10KDa) and high A/X ratio (0.83) induced significantly higher ( $P < 0.05$ ) iNOS expression ( $132.2 \pm 11.9 \mu\text{g/ml}$ ) than water-extracted AXs iNOS expression ( $104.3 \pm 4.6 \mu\text{g/ml}$ ) and the increase in NO secretion corresponds to iNOS concentration in cultured cells, which suggest a pathway by which AXs modulate NO production in human macrophage cells. In addition, It was also found that at a concentration of  $500 \mu\text{g/mL}$ , enzyme-treated AXs caused a more significant inhibition of proliferation of Gastric cancer cells ( $p < 0.05$ ) and also more significantly reduced the viability of Gastric cancer cells than water extracted AXs following 24 and 48 hours treatment in *in vitro* ( $p < 0.05$ ). Therefore, a potential application of AXs is potentially used as a new method of treating gastric cancers.

w.li@chester.ac.uk

## Extraction and characterization of pectin from banana (*Musa Acuminata* × *Balbisiana*) peel with different percentage of sugar

Chek Zaini Hassan

Universiti Sains Islam, Malaysia

Pectin was extracted from banana (*Musa acuminata* × *balbisiana*) peels by traditional method. Banana peel is an underutilized waste produced from banana processing in Malaysia. The suitable ratio of banana peel to water for pectin extraction was 1:0.8 as it was proved to successfully produce gel with addition of sugar and lemon juice. Four formulations of gels with different percentage of sugar (20.8%, 27.7%, 41.6% and 48.6%) were analyzed to study the effect of sugar on the characteristic of gels in terms

of spreadability, tenderness, colour, texture, water activity and moisture content of gels. The spreadability of gel was determined using Line Spread test. As the formulation went up by the increasing percentage of sugar, the distance of gel spread was decrease. Gel tenderness was determined in terms of percentage sag and it showed a significantly decrease ( $P \leq 0.05$ ) as the percentage of sugar increase from formulation 1 to 4. The colour and texture analysis showed a significant difference between each formulation. Both water activity and moisture content of gels decrease as the formulation went up by the increasing percentage of sugar. Watermelon jam added with gel form from banana peel was made to test the ability of gel.

chek\_zaini@usim.edu.my



## Greenhouses for food production and the environment

**Abdeen Omer**  
Environmental Research Institute, UK

A greenhouse is essentially an enclosed structure, which traps the short wavelength solar radiation and stores the long wavelength thermal radiation to create a favourable microclimate for higher productivity. The sun's radiation incident on the greenhouse has two parts: direct radiation and an associated diffuse sky radiation. The diffuse part is not focused by the lenses and goes right through Fresnel lenses onto the surface of the absorbers. This energy is absorbed and transformed into heat, which is then transported via the liquid medium in copper pipes to the water (heat) storage tanks or, if used, open fish tanks. In this way, an optimal temperature for both plant cultivation and fish production can be maintained. Stable plant growth conditions are light, temperature and air humidity. Light for the photosynthesis of plants comes from the diffuse radiation, which is without substantial fluctuations and variation throughout most of the day. The air temperature inside the greenhouse is one of the factors that have an influence on the precocity of production. The selective collector acts in a more perceptible way on extreme air temperatures inside the greenhouse. Hence, the system makes it possible to avoid the excessive deviation of the temperature inside the greenhouse and provides a favourable microclimate for the precocity of the culture. Sediment and some associated water from the sediment traps are used as organic fertiliser for the plant cultivation. The present trend in greenhouse cultivation is to extend the crop production season in order to maximise use of the equipment and increase annual productivity and

profitability. However, in many Mediterranean greenhouses, such practices are limited because the improper cooling methods (mainly natural or forced ventilation) used do not provide the desired micro-climatic condition during the summer of a composite climate. Also, some of these greenhouses have been built where the meteorological conditions require some heating during the winter, particularly at night. The worst scenario is during the winter months when relatively large difference in temperature between day and night occurs. However, overheating of the greenhouse during the day is common, even in winter, requiring ventilation of the structure. Hence, several techniques have been proposed for the storage of the solar energy received by the greenhouse during the day and its use to heat the structure at night. Reviews of such techniques are presented in this chapter. Air or water can be used for heat transport. The circulating water is heated during the day via two processes. The water absorbs part of the infrared radiation of the solar spectrum. Since the water is transparent in the visible region, they do not compete with the plants that need it. Alternatively, the water exchanges heat with the greenhouse air through the walls. At night, if the greenhouse temperature goes down below a specified value, the water begins to circulate acting as heat transfer surfaces heating the air in the greenhouse. This chapter describes various designs of low energy greenhouses. It also, outlines the effect of dense urban building nature on energy consumption, and its contribution to climate change. Measures, which would help to save energy in greenhouses, are also presented. It also enabled the minimisation of temperature variation and, hence avoided the hazard of any sudden climatic change inside the greenhouse.

abdeenomer2@yahoo.co.uk

## Eco-efficiency: Application in the university restaurants on Brazil

Strasburg, V.J.<sup>1</sup> and Jahno, V.D.<sup>2</sup>

<sup>1</sup>Federal University of Rio Grande do Sul, Brazil

<sup>2</sup>Jahno, V.D., Universidade Feevale, Brazil

**M**eal production for communities is an important activity in the service segment. The concept of eco-efficiency (EE) prioritizes the more efficient use of materials and energy, combining economic and environmental performance. In this context, the objective of this study was to propose and apply a procedure for evaluating environmental performance from the perspective of EE, for the foodservice segment. The procedure developed was applied to measure the EE relationship of supplies used in food service in five university restaurants (URs) at a Brazilian federal public university with secondary data from 2012. The calculations for assessing the EE included the selection of foods of animal and plant origin according to ABC analysis. Considering that one of the purposes of providing meals is to give energy support to their users, the

approach used for calculating EE included the provision of energy in kilocalories and financial values in relation to the Environmental impacts upon which the variables of the water footprint and amount of wastes generated from the foods used were selected. The five URs served 1,532,588 meals in 2012, and the average served varied from 481 to 3141 meals per day, according to the size of each restaurant. The EE in the relationship between kilocalories and kilograms regarding the environmental impacts of the foods used exhibited values that varied from 0.283 to 1.071. When calculating the EE that considered the provision of kilocalories and financial values regarding the environmental impacts, the values varied from 0.091 to 0.322. In both measurements, the best results were obtained by UR 5 and UR 3, that respectively which had the lowest and highest annual average of meals served. The procedure developed and proposed proved to be adequate for evaluating the environmental performance in terms of EE among restaurants with the same type of service.

vjs.nut@terra.com.br & vjs.nut@hotmail.com

## Breastfeeding at maternity hospital and infant mortality in Brazil

Marina Ferreira Rea and Osvaldinete Lopes De Oliveira Silva

International Baby Food Action Network, Brazil

**Introduction:** Breastfeeding should be implemented from birth, as it contributes to the reduction of infant mortality.

**Objective:** To estimate the number of deaths potentially avoided by the Baby-Friendly Hospital Initiative (BFHI) in Brazil, this enables strategies that allow breastfeeding exclusively from birth.

**Methods:** The analysis consisted of: estimating the effectiveness of BFHI in breastfeeding in the first hour of life (BF1h), the exclusive breastfeeding in infants 0-5 months (EBF) and of any breastfeeding. The potential impact of BFHI on the reduction of infant mortality mediated by increased breastfeeding was estimated by subtracting the prevalence of each breastfeeding indicator for both BFH and NBFH born babies. For this purpose, the Population Attributable Fraction (PAF) of breastfeeding was used for the following indicators: late

neonatal mortality mediated by non-breastfeeding in the first hour of life, all-cause mortality in infants less than 6m and mortality due to infection in infants under 6 months; The latter two, mediated by non-breastfeeding. The PAF was obtained for children born in BFH and NBFH, using the prevalence of non-breastfeeding and the estimated relative risks. Finally, it was estimated the number of deaths potentially preventable by the BFHI, considering the data on infant mortality occurred in 2008.

**Results:** The sample consisted of 18,929 children under 6 months of age; Of these 34.1% were born in BFH. The BFHI promoted a statistically significant increase in the 3 indicators of BF: 11.7% in BF1h; 7.9% in EBF and 2.1% in any breastfeeding. If all children were born in BFH, the fraction of mortality attributable to non-breastfeeding (PAF) would be lower, potentially avoiding 4.2% of late neonatal mortality, 3.5% of all-cause mortality, and 4.2% mortality from infection.

**Conclusion:** BFHI improves breastfeeding and contributes to a reduction in mortality.

marifrea@usp.br

## **The Ghost Aim in Medical research - Preventing fattening/insulin resistance/overall inflammation**

**Mario Ciampolini**  
University of Florence, Italy

In the world, physicians more and more appreciate findings on preprandial hunger arousal and less and less deny their validity in my country (Tuscany). People taking food after perceiving signals of hunger (Initial Hunger Meal Pattern, IHMP) prevent fattening/insulin resistance that causes an overall inflammation, diseases like asthma, vascular and malignancy risks. I wonder why scientists denied value to my endeavor. The division had a start when I read the Handbook of Physiology of the American Society for Physiology, in 1967. I was charged with the treatment of malnutrition and diarrhea. I read the handbook to become aware about mucosal digestion and absorption. At that time, these points had to be diagnosed to treat malnourished children. Before beginning any research, a dynamic, reversible condition seemed instead to operate in chronic diarrhea children and had to be found. I read that 50% - 60% or more immune cells of the human body reside in the mucosa of small intestine (Mowat, 1987, 44; Brandtzaeg et al., 1989; Abrams, 1977). Bacteria grow in the small and large intestine in dependence on nutrients, mainly those nutrients that produce energy availability (sugars, carbohydrates, amino-acids, fats (Hungate, 1967). Thus bacterial growth is proportionate to positive energy balance. I studied bacteria number on the intestinal mucosa in time after last meal. A longer interval from the meal produced a decrease in bacteria number. Thus I concluded that meal absorption develops in a competition between mucosa cells and bacteria (Ciampolini et al. 1996, 2000). The conflictual nature of mucosal absorption has been confirmed (Cooper, Siadaty, 2014; Mccoy, Köller, 2015). I personally provided many demonstrations that current meal pattern provides a lot of illnesses. I add here another proof: The many successful cures of gastrointestinal pathologies by IHMP suggest that the theory used for recovery was objective. In this view, the question: "what food provokes cancer?" is absurd. Tumor heterogeneity is a problem for cancer therapeutics. I am pleased by this information. Malignancy needs to be prevented through a better maintenance of immune system. Health follows the relation between energy intake and expenditure. Both the

existence of hundreds or thousands of bacterial species in intestine and the existence of a local huge immune reaction in intestinal mucosa sustained the conflictual view. Reading the Handbook isolated myself in a Medical World that was unaware of microbiology. Physicians saw improvements in the children I treated, but did not understand the intestinal mechanisms that were far away from their observation. They repeated: Ciampolini is alone in his statements. Now, hundreds of printing houses, and hundreds of scientific Journals ask me for submitting articles. I am alone and cannot produce hundred articles that are new and different each other. The growing number of electronic Journals created a "Babel" condition that may be useful for commercial exploitation (or for maintenance of power in some editors) but not for the "ghost aim" of improving awareness about the upsurge of malignant and vascular risks, not to meet the expectation of one billion of malnourished people.

Do we have to go on in the illusion of promoting knowledge by printing ten similar articles instead of one? I would prefer a grouping of Journals on basic assumptions: the study of contagion, the study of energy balance, the study of essential nutrients, the study of genetics. A confrontation inside groups is necessary to decide either the opening of new research fields or the fusion of similar Journals.

Publishing on Health requires an absence of conflicts of interest. This becomes more and more difficult. I was stopped in my institute just because I was unable at constructing a profit from my findings. Individuals devoid of conflicts of interest are precious and rare in a complex world founded on the commerce of innovation and research. Heads of Journals might join together in an endeavor for the construction of a new order. Having forwarded this claim for a shared action, I expect that somebody will respond to my address to discuss chances.

The first step within the ghost aim should be the creation of a consensus among scientists on the pathogenic principal mechanism(s). The second step would be much easier: teaching the consented mechanism to the population. Other mechanisms might better function.

This small piece is intended to be published in many Journals that requested a writing from mine. The piece is sufficient to show a valid although intolerable situation.

mlciampolini@fastwebnet.it

## Nutritional management of polycystic ovary syndrome

Mohamed Radwan  
CR AODA, Egypt

Polycystic ovary syndrome is becoming very common among girls from ages 14 to 21 years old alongside women in their childbearing period. A combination of menstrual irregularities, overweight or obesity, insulin resistance (type2 diabetes) and symptoms of virilization are characteristics of these cases.

A multidisciplinary team should be involved in managing these cases and may consist of a Gynecologist, endocrinologist, nutritionist and a psychologist.

The role of nutritionists is crucial in these cases in weight reduction and nutritional management.

It is mandatory to present some questions that may help in expanding further our understanding of the nutritional management of this syndrome, such as;

1. Is it an easy process to reduce weight of PCO patients?
2. What is the most suitable nutritional plan for these cases?
3. Is it successful to use one diet plan for all patients or a specific plan tailored for each patient?

Based on these questions, we will summarize the medical nutritional therapy and weight management in PCO patients and highlight the best eating plan and dietary composition in the treatment of these women. We will also discuss the role of dieticians in treating PCOs and overcoming the Challenges these women face.

Mohsradwan@yahoo.com

## Effectiveness of a 16-month multi-component and environmental school-based intervention for recovery of poor income overweight/obese children and adolescents: Study protocol of The Health Multipliers Program

Pollyanna Fernandes Patriota, Andrea Filgueiras, Maria Paula de Albuquerque, Semiramis Domene and Ana Lydia Sawaya  
Federal University of São Paulo (UNIFESP), Brazil

Excess of weight is a serious public health problem in almost all countries afflicting people from different ages and socioeconomic levels. Studies have indicated the need for developing strategies of treatment that intervene directly in the obesogenic environment. This study aims to evaluate the effectiveness of a multi-component and environmental school-based intervention, lasting 16 months, for the recovery of the nutritional status of low-income children and adolescents with overweight/ obesity. Methods/ Study design The study is conducted by the Center for Recovery and Nutritional Education (CREN) in the city of São Paulo, Brazil. Two schools located in poor neighborhoods were selected for the intervention. The intervention duration is from March 2016 to June 2017. The participants are 791 students aged 8 to 12 that make up the universe of students of this age in the two schools. At the beginning of the intervention anthropometric

measurements were carried out to assess nutritional status. One school was chosen for convenience to be the control group and the other to be the experimental group. The intervention of the experimental group (n = 438) consists of the following weekly activities at school: psychological counseling in groups, theoretical/practical nutrition workshops and supervised physical education classes. In addition, theoretical and practical educational activities are held regularly for parents, teachers and cooks. Students with excess of weight (>1 BMI –for-age Z score, n = 138) underwent clinical and nutritional care periodically in outpatient care at CREN. Students enrolled in the control group (n = 353) participated in psychological counseling groups and theoretical/practical nutrition workshops for 6 months that took place in the school environment with the whole classroom for motivational purpose. In the following 10 months the students with excess of weight from the control group (n = 125) were invited to attend the routine outpatient care at CREN. Discussion: This study is the first to assess the effectiveness of a multi-component and environmental school-based intervention for the recovery of low-income overweight/obese children and adolescents. If positive, the results will demonstrate the feasibility for the recovery of excess of weight in populations in similar conditions and age.

pollypatriota2@gmail.com



## Some hematological studies in broiler chicks as affected by using dried distiller's grains with solubles in their diets

S.A Abd EL-Latif, A. H. EL-Bogdady, Kawsar, M. Ghally and A. S. Abd EL-hameed  
Minia University, Egypt

A total number of 256 unsexed, one day old Arbor acres broiler chicks were used to study the effect of using distillers dried grains with solubles (DDGS) at levels (0, 5, 10, 15%) treated without or with enzyme (avizyme 1500) at level 0 and 1gm / kg diet on some blood parameter of broiler chicks. At the 6th week of age, blood samples were collected from wing vein of four chicks from each experimental groups to study some blood hematological study. Birds fed dietary 15% DDGS recorded the highest ( $P \leq 0.01$ ) values of RBC's, PCV%, Hb, MCH and MCHC compared to other treatments. The greatest ( $P \leq 0.01$ ) value of MCHC was recorded for birds fed dietary 5% and 15% DDGS. While, birds fed 15% DDGS recorded the highest ( $P \leq 0.01$ ) value of PCV%. Hemoglobin (Hb) concentration increased by using DDGS at all levels compared to control group. Adding enzymes to broiler diet improved ( $P \leq 0.01$ ) Hb and MCV values.

The principle reason for broiler producers to select dietary ingredients is economy, because feed represents approximately 70% of the live production cost. In feed formulation, nutritionists consider a wide range of ingredients and attempt to develop feed formulas that provide the desired level of nutrients at minimum cost. In formulating diets the nutritionist must consider not

only cost and nutrient content of the ingredient, but also the quantity available for use and consistency of supply (Wang et al., 2007). Therefore, many attempts are usually made to reduce feed cost without adversely affecting performance and/or product safety by using some Un-traditional ingredients in the diets. In developing countries, there is a shortage of both energy sources and feedstuffs with acceptable protein content for animal production. In view of the worldwide demand for additional feed sources. Moreover, enzymes were used most commonly to aid digestion of diets where improvements are seen in dry matter digestibility. There is also current interest in enzymes designed specifically to improve soybean meal digestibility (Lesson and Summers, 2005).

Recently, increased emphasis on ethanol production as biofuel in the United States and other countries has and will continue to lead to significant increase in the amount of dried distillers grains with solubles (DDGS) available to the feed industry (Batal and Dale, 2003). DDGS has been a by-product of the beverage industry, for the most part, with several different grains used in the fermentation process. In the late 1930s, feed producers began to incorporate DDGS into livestock rations, but before this, it was a by-product with limited value (Scott, 1970). The beverage industry was not the only source of DDGS; ethanol plants also produced this ingredient. Production of ethanol from 100 kg of corn using the dry-milling method produces approximately 34.4 kg of ethanol, 34.0 kg of carbon dioxide and 31.6 kg of distillers dried grains with solubles (Renewable Fuels Association, 2005).

profshaker71@yahoo.com

## Malnutrition in Disabled Children

Ibrahim Abdullah Mohammed Refaei  
Sultan Bin Abdulaziz Humanitarian City, KSA

Statement of the Problem: Children with special needs suffer from malnutrition due to lack of nutrients necessary for child development and physical and cognitive development.

It is therefore necessary to intervene in order to overcome the problems that malnutrition may cause to address the problems related to malnutrition early, which contributes to improving the quality of life and preserving the remaining physical and mental potential and try to develop them to be healthier in the future.

ibrahimrefaei@hotmail.com

## Nutritional Assessment of Children with Sickle Cell Diseases in Komfo Anokye Teaching Hospital

Osei Bonsu Tracy, F.C. Robertson-Mills, Charles Appery, Agartha N. Ohemeng

Tracy Osei Bonsu, Kwame Nkrumah University of Science and Technology, Ghana

**Background:** Sickle cell disease (SCD) is a long term haemolytic disease mostly associated with impaired growth, delayed maturation and poor nutrition status. It is also one of the major contributing factors for childhood mortality.

**Objective:** The study aimed to assess the nutritional status of children with sickle cell diseases using dietary intakes, anthropometric measurements and biochemical markers.

**Methods:** A cross sectional study was conducted on 100 children with sickle cell diseases aged 3- 12 years at the Komfo Anokye Teaching Hospital. Twenty-four hour dietary recall and food frequency questionnaire were used to assess dietary intake. Serum protein, albumin and

ferritin as well as full blood count were used to assess biochemical status. Weight, height and Mid-Upper-Arm-Circumference were used to calculate Body Mass Index (BMI), weight-for-age (percentile), height-for-age (percentile), BMI-for-age (percentile) and MUAC-for-age (percentile).

**Main findings:** The mean intake of iron was  $5.9 \pm 3.0$  mg/d, zinc was  $5.1 \pm 3.0$  mg/d, and vitamin A was  $107 \pm 112.4$ , while vitamin E was  $4.2 \pm 2.9$  for the children with SCD. Calories were  $852 \pm 342.3$  kcal while protein was  $25.0 \pm 10.7$ g/d. Low BMI-for-age, MUAC-for-age, weight-for-age and height-for-age were observed in 40%, 37%, 22%, and 69% of the children, respectively.

**Conclusion/ Recommendation:** There was significant association ( $p = 0.00$ ,  $r = 0.64$ ) between vitamin B12 and the Red Blood Cell count. Thus, there was inadequate nutritional intake of the children that were assessed. It is therefore recommended that a longitudinal study be conducted on children with sickle cell diseases to assess the actual nutritional requirements of children with SCD.

tracob@yahoo.com

## The effects of fat substitution using palm stearin on the physicochemical properties of shortened cake

Chek Zaini Hassan and M F Ainil

Universiti Sains Islam Malaysia, Malaysia

Fats used in baking contain trans fatty acid that has been proven to contribute towards various health problems. Palm stearin is used to substitute shortening in different ratios to observe the effects on the physicochemical properties of cake. Formulations A, B, C, D, and E each has palm stearin substitution of 0%, 25%, 50%, 75%, and 100% respectively. All formulations were analyzed for its specific gravity, fat content, moisture content, color analysis, texture analysis and sensory analysis. At 25%

level of substitution (formula B), moisture content ( $0.44 \pm 0.00$  %), fat content ( $27.75 \pm 0.42$ %), hardness ( $1469.4 \pm 432.1$  N), and overall liking in sensory analysis ( $5.5 \pm 1.10$ ) are found to be similar with formula A; formula B for color analysis  $80.84 \pm 0.20$  (L\*),  $2.79 \pm 0.40$  (a\*), and  $30.30 \pm 0.64$  (b\*) and specific gravity ( $0.84 \pm 0.12$ ) are however significantly different with formula A. It is found that a different substitution ratio does affect the physicochemical properties of the cakes. Substitution up to 25 % shows that it is best in producing cakes most similar to formula A. Further studies need to be carried out in order to find a method that may incorporate higher palm stearin substitution as well as palm stearin functionality in a cake system.

chek\_zaini@usim.edu.my

## Nutritional profile of Diabetes Asian Indians with Low Body Mass Index: What are the unmet needs?

Mini Joseph, Riddhi D Gupta, Ramachandra Roshna, Anoop Shajith, Vijayalakshmi Anand, Ruth Volena, Nithya Devanithi, Asha H Shyamasunder and Nihal Thomas  
Christian Medical College, India

**Statement of the problem:** There is paucity of data on nutritional intake in low BMI (BMI) Asian Indians with Diabetes.

**Aim:** To study the difference in nutrient pattern in lean Type 1 Diabetes Mellitus (T1DM) and Fibro-calcific Pancreatic Diabetes (FCPD) patients.

**Methodology:** This cross-sectional study consisted of T1DM (n = 40) and FCPD patients (n = 20) who were gender and BMI matched. Nutritional data was collected using 24 hour recall method and food diary. Fasting blood samples were analyzed for lipid profile, serum creatinine, glycosylated hemoglobin, albumin, calcium and vitamin D. Stool samples were analyzed for pancreatic elastase.

## Improvements in long term weight-loss and clinical parameters with the use of nutrigenetics in a 2-years prospective study

Maria Vranceanu  
Eurogenetica, Italy

**Objectives:** Genetic variation is known may influence dietary requirements, giving rise to the new field of nutritional genomics and raising the possibility of individualizing nutritional intake for optimal health, disease prevention and better weight management on the basis of an individual's genome. This study investigated whether the inclusion of genetic information to personalize a patient's diet (nutrigenetics) could improve long term weight management.

**Methods:** Two groups of patients attending a weight management clinic were prospectively studied. The ketogenic group consisted of 53 patients followed for

Percentage analysis, Independent sample t test and Pearson Coefficient Correlation were used to analyze the data. P value < 0.05 was considered as statistically significant.

**Findings:** The FCPD patients had a significantly lower vitamin D status compared to the T1DM group (p=0.035) however, hemoglobin, triglycerides, low density lipoproteins, creatinine, albumin and calcium were similar between the groups. Further, FCPD patients had a significant higher intake of fat (p=0.039), fibre (p=0.000), calcium (p=0.047), phosphorous (p=0.035), and niacin (p=0.001) and calories from fat (p=0.047). The T1DM group had a significantly higher intake of thiamine (p=0.047) and carbohydrates (p=0.014).

**Conclusion:** T1DM and FCPD groups have similar dietary pattern with deficit in fibre, calories, macronutrients and micronutrients. Malabsorption and poor glycaemic control in FCPD patients can be attributed to a higher dietary fat intake. A balanced diet can ensure better glycemic control.

minijoseph66@yahoo.in

24 weeks a ketogenic diet plan with 1600 kcal. The nutrigenetics group consisted of 61 patients were offered a nutrigenetic test screening 26 variants in 24 genes involved in metabolism. This group followed a personalized diet with 1600 kcal too and all recommendations based on their DNA. Weight, BMI, total cholesterol, HDL cholesterol and fasting blood sugar levels were monitored.

**Results:** Both diets group performed well over the 24 weeks but after 2 years the nutrigenetic group fared better on the clinical values of plasma glucose, total cholesterol and HDL. Furthermore after 2 years 75% of the nutrigenetic patients had maintained weight loss compared to 21% in the non-genetic group.

**Conclusions:** Addition of nutrigenetically tailored diets in the weight loss phase and the general healthy eating for life phase resulted in better longer-term BMI reduction and improvements in blood glucose and cholesterol levels

marievranceanu@gmail.com

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Website: [nutrition-foodtechnology.alliedacademies.com](http://nutrition-foodtechnology.alliedacademies.com)