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Global Congress On Food Science, Nutrition and Health

September 18-19, 2019 | Barcelona, Spain

Keynote Presentation- Day 01

Global Congress On Food Science, Nutrition and Health

September 18-19, 2019 | Barcelona, Spain

Marica Bakovic*, Sugashan Sivanesan, Adrian Taylor, Laila Shenkel and Vera Hedtke

University of Guelph, Canada



Effectiveness of choline and betaine in improving lipid homeostasis and systemic energy metabolism

Choline plays a critical role in systemic lipid metabolism and limited choline supply inhibits lipoprotein secretion and causes development of non-alcoholic liver disease. Under conditions of perturbed membrane phospholipid formation caused by a heterozygous deletion of the mouse *Pcyt2* gene (ETKO mice), choline supplementation reduces adiposity restores membrane function and muscle insulin signaling. Similarly to choline, betaine supplementation stimulates adipocyte lipolysis and inhibits fatty acid formation by lipogenesis⁴. Choline as well as betaine stimulates mitochondrial fatty acid oxidation genes and reduces the expression of fatty acid lipogenic genes. Oxidation of choline to betaine and donation of methyl groups to the one-carbon methionine pathway strongly depends on choline and betaine availability. Our studies demonstrate that choline and betaine supplementation stimulates energy metabolism by participation in the mitochondrial oxidative demethylation pathway. Plasma metabolomic profiling revealed systemic changes caused by choline and betaine supplementation under condition of obesity. They both caused increased lipolysis (glycerol accumulation) and reduced sarcosine, taurine, acetate, and β -hydroxybutyrate levels. They effected different steps in the citric acid cycle. Choline increased succinic acid while reducing branched-chain amino acid levels, while betaine increased α -keto glutaric acid and increased histidine and alanine levels, the specific biomarkers for betaine treatment. These data provide novel information on how choline and betaine supplementation can aid in treatment of obesity related disorders due to their mitochondrial oxidative degradation and demethylation in mitochondria.

Biography:

Marica Bakovic is a Professor in the Department of Human Health and Nutritional Sciences at the University of Guelph. Dr. Bakovic has lasting interests in choline and phospholipids, especially in the molecular regulation of membrane transport and lipid metabolism. Her interests include the regulation of metabolic syndrome, type-2 diabetes and hyperlipidemia. By disruption of the key regulatory gene involved in phospholipid formation *Pcyt2*, an ethanolamine cytidylyltransferase, her group established a strong link between membrane dysfunction, ageing and development of obesity, insulin resistance, hypertension a well-known characteristics of metabolic syndrome. Dr. Bakovic areas of expertise include genomic and non-genomic regulation of metabolism with specific emphasis on regulatory pathways and molecular networks linking the membrane function with methyl-group metabolism and gene methylation. Her work on nutrient transport include characterization of choline transporter for phospholipid synthesis with emerging group of membrane and mitochondrial transporters from the choline transporter-like family SLC44A/CTL.



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Jonathan Poyourow

Johnson & Wales University, USA



Fueling the Athlete

The field of sports nutrition and athletic performance cuisine is a rigorous and dynamic one. As a Chef Dietitian we must master academic core competencies in exercise physiology, psychology, integrated metabolism and biochemistry in addition to being well versed in all basic and advanced culinary techniques and flavor profiles. These are just the initial parameters for a successful career in this highly charged yet wildly rewarding field of practice. In addition to the academic fundamentals, it is imperative that sports dietitians and performance chefs understand the sport in which our clientele participate. This sport specific understanding enables the practitioner to focus upon, and educate the athlete as to, proper fuel utilization, guided by their understanding of the proper mechanics of movement/athletic training as well as the psychological processes that can motivate the participant to perform optimally.

Sports nutrition as a field has grown substantially over the past 50 years, from big pasta dinners the night before a race for “carbohydrate loading” to today’s scientifically validated ergogenic aids and the world of nutrigenomics. The last ten years has seen the largest advancement of sports nutrition, with the following areas driving much of the research: the effects of exercise on protein utilization and proper meal timing to maximize the anabolic response. We are in an era of unprecedented growth and the new knowledge, which is constantly evolving, can assist in combating the misinformation so often found on the internet and in locker rooms. This in turn is helping to produce ever-improving performances by athletes in all areas of sport and exercise.

Biography:

After graduating from Johnson & Wales with a BS in Culinary Nutrition, Jonathan Poyourow honed his Dietitian skills first as an intern in the US Army Dietetic Internship then with multiple appointments as a staff dietitian in various military hospitals across the country. He then entered the realm of sports nutrition working with not only the US Army Ranger Battalion but also as the Division Dietitian to the 101st Airborne Division here in the US as well as in a deployed setting to Afghanistan for a year. After returning to stateside he then started to pursue his master’s degree in health and wellness from Liberty University while also completing the requirements for his Certified Strength and Conditioning Specialist certification. Jonathan has been teaching multiple classes at Johnson & Wales University for 5+ years and is a consulting Chef/RD to various professional and top tier collegiate sports programs across the country.

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Evaluation of nutritional value, environmental impact and consumer acceptance of food products containing edible insects

Alexandra Kazaks

Bastyr University, USA

While considering the environmental sustainability of our food supply it is valuable to focus on edible insects that are efficient, prolific, resistant to drought, and produce lower levels of greenhouse gases than animals. Mealworms, in particular, have potential nutritional and environmental benefits. Insect consumption is uncommon in Western cultures as most people are repelled at the thought of eating insects. Incorporating insects in familiar foods may help overcome this food neophobia.

The objectives of this study were to determine the nutritional profile of mealworms and whether processed mealworms are an acceptable protein source for consumers and to evaluate the relationships between acceptance of mealworms as a protein source and physical activity, food-related attitudes, and socio-demographic characteristics. We also evaluated nutrition professionals' knowledge, experience and recommendations regarding edible insects.

Fatty acid profile and nutritional content of frozen and freeze-dried meal worm samples was determined by an AOAC International Guidelines certified lab. Consumer information from adults throughout US was gathered by a questionnaire disseminated via social media while another elicited opinions and recommendations from nutrition professionals. Data was analysed using SPSS.

Dried mealworm powder (100g) provided 491 Kcal; 48% protein; 12% carbohydrate and 27% fat (MUFA highest). A wide range of micronutrients including 961 mg potassium make this a nutrient-dense food. Consumer responses indicated 37% who previously consumed insects showed higher willingness to buy (WTB) mealworm products ($t=5.088(125)$, $p<0.0001$). Participation in a range of physical activities was associated with high levels of WTB. The most appealing forms of mealworm protein were protein bars and restaurant dishes. Of 316 nutrition professionals, 18% had previously consumed insects, 10% were familiar with nutrition content of commonly eaten insects, 61% would recommend insects.

Study results may aid in development of nutrient-dense products that meet consumer demand and promote increased interest in sustainable protein sources.

Biography

Alexandra Kazaks is a professor at Bastyr University, Seattle Washington. She received a doctorate in Nutritional Biology from the University of California, Davis. Her research has extended to the effects of physical activity and plant-based foods on weight management and vascular disease risk factors, dietary supplements, and micronutrients. Her published works include numerous journal articles, book chapters, and books on micronutrients, metabolic syndrome, and obesity. Dr. Kazaks is a frequent speaker both in the US and internationally on these topics.

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The role of vitamin D as a negative regulator of mTOR in basal cell carcinoma

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The relationship between vitamin D and non-melanoma skin cancer is not clear. Epidemiological studies are inconsistent and inconclusive, and mechanistic studies are lacking. It has been suggested that vitamin D possesses anti-proliferative and pro-differentiation effects by negatively regulating key signaling pathways through its nuclear receptor (VDR), that is a nuclear transcription factor. In particular, VDR target gene REDD1 (regulated in development and DNA damage response 1) inhibits mTOR pathway, thus impacting cellular growth.

Our study aimed to explore the role of vitamin D on the onset, progression and possibly treatment of basal cell carcinoma (BCC). Three tissue samples were collected from 20 BCC patients (Cancer, Proximal, and Distal), and one sample from 6 cancer-free individuals. BCC and its feeding cells seemed to up-regulate vitamin D activation enzymes, VDR, and its co-activators, thus proposing higher local activity of vitamin D. Despite the significantly increased protein levels of REDD1 in the cancer tissue, our data showed that VDR's ability to down-regulate mTOR pathway through REDD1 was diminished. Interestingly, Vitamin D negative regulation of Hedgehog-Gli pathway was also lost in BCC tissue, and kRas mutation was detected. In conclusion, we propose that the anticipated role of vitamin D is not conserved in BCC.

Biography

Rawia Khasawneh is an Assistant professor in the program of Food and Nutritional Sciences at Central Michigan University, Michigan, USA. Her expertise is in nutritional molecular biology with emphasis on in nutrigenomics and carcinogenesis. Her research interest is focused on the role of vitamin D metabolism on the progression of non-melanoma skin cancer.



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Skin anti-aging diet

Diego De Castro Salau

Dietitian and nutritional coach, Spain

Introduction: The skin, the body's largest organ and primary defense barrier, is permanently exposed to both exogenous and endogenous skin deteriorating agents (SDA) such as oxidative damage, inflammation, immune dysfunction, homeostatic imbalance and photoaging. The repetitive and exacerbated action of these factors can lead to deterioration and premature aging of the skin favored by the appearance of spots, wrinkles, a poor regeneration of collagen, redness, acne and other disorders.

Objectives: to determine which are the micronutrients (vitamins, minerals and phytonutrients), foods and combinations thereof that can help reduce the damage of ADPs that cause aging.

Search methodology: a literature review of the main databases (Cochrane, Prospero, Health evidence, Scielo, Pubmed and Scopus) has been carried out.

Findings: There are certain micronutrients that in specific foods are in sufficient concentration to significantly reduce the action of ADP if consumed with adequate frequency and quantity. Omega 3 polyunsaturated fatty acids are able to increase flexibility and hydration and reduce skin inflammation by providing protection against ultraviolet (UV) rays. Vitamin E in adequate doses proved to be the largest antioxidant defender for the skin offering protection against inflammation. Zn has been shown to favor skin regeneration and regulate inflammation. Vitamin C in addition to providing antioxidant protection, proves to be essential for the renewal of collagen structures. Carotenoids offer great antioxidant and UV protection. There are also foods such as cocoa, green tea and turmeric among others that offer great protection against ADP if taken adequately.

Conclusion: carrying out a proper, balanced diet rich in certain food sources of these vitamins, minerals and phytonutrients can offer tangible protection against ADP and visibly reduce the signs of skin aging.

Biography

Diego De Castro is dedicated to helping motivated people to generate new habits that allow them to improve their quality of life and overall health. His 7 years of experience in consulting and his training in nutritional coaching have helped him to implement increasingly effective techniques aimed to effectively help individuals and groups reach their health and well being goals. He is an active lecturer and professor in several courses and workshops throughout Spain. He is co-creator of a successful program designed to help hypothyroidism patients relieve their symptoms. He also collaborates with a well-known food brand in the development of anti-aging and anti-inflammatory food formulas. Diego is known to be a good communicator and does so in his own blog at diegodecastro.es and as a guest writer in health and news blogs.



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Role of micronutrition in hypothyroidism caused by autoimmune thyroiditis or Hashimoto

Montserrat Reus

Dietitian and Nutritionist, Spain

Introduction: Hashimoto autoimmune thyroiditis (AIT) is the most common cause of hypothyroidism in iodine sufficiency areas. It is caused by chronic inflammation of the gland, due to lymphocyte infiltration, which causes its hypofunction. Thyroid hormones are involved in the regulation of most organic functions. The transformation of the hormone T4 to the active cellular form T3 depends on the action of deiodinases (DIO). For the adequate production and activity of DIOs and thyroid hormones, the participation of several micronutrients is necessary.

Objectives: Determine what type of relationship exists between the status of several micronutrients and the AIT, and whether their supplementation can improve both hormonal values and symptomatology of patients.

Search methodology: A literary literature review of the main databases (Cochrane, Prospero, Health evidence, Scielo, Pubmed and Scopus) has been carried out.

Results: The micronutrients on which there is greater evidence of its effect on thyroid metabolism are iodine and selenium. Both must be at their optimum value. The immunomodulatory capacity of vitamin D and inositol is promising in compensating for the autoimmune imbalance. A good status of iron and vitamins B12 and B9 are crucial for the prevention of anemias and hyperhomocysteinemia, very common comorbidities. A good level of antioxidant vitamins (A, C, E) and magnesium confer protective capacity against oxidative stress. This is exacerbated given the chronic inflammatory context of the gland.

Conclusion: Current evidence points to a key role of micronutrition in the AIT, with many aspects still to be elucidated. The existing challenges are, both the concretion of the most adequate supplementation (dosage, duration of treatment, presentation formula); as well as the understanding of the enormous complexity of existing synergies.

Biography

Montserrat Reus (BSc, MSc) is an experienced Dietitian and Nutritionist. She is devoted to created new instruments to change hypothyroidism patients' life. Motivated to empower people who suffer from thyroid disease, she has co-created the Reshape method for hypothyroid conditions. An online course that helps patients to recover health, with lifestyle changes on anti-inflammatory nutrition, adapted exercises, meditation, and knowledge on the root causes of hypothyroidism. Montserrat develops her professional career in private consultancy, research, and training activities for professionals and patients.



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We are not what we eat, we are what we absorb

Marina Sala Martín

Nutritionist and Neuropathic Dietitian, Spain

There are different factors involved in intestinal absorption from biochemical processes, micro intestinal biota, genetics, psycho-emotional terrain, genetic predisposition, intestine morphology and food combination among others.

The gut-brain axis is a bidirectional pathway that communicates the brain with the gastrointestinal system. Commensal bacteria of the gut can signal to the brain through this axis formed by immune responses, vagus nerve, the hypothalamic-pituitary-adrenal axis (HPA), SCFA, enteroendocrine signalling and tryptophan metabolism. Through all these pathways the gut microbiota can influence the nervous central system (NCS) altering the neurotransmission and the behaviour. Disbiosis has been detected in several neuropsychiatric.

The central nervous system is interconnected to our digestive system, so it is not only of importance what we eat but also how we eat it. The bio-psycho-sociological conditions that surround our meals, the attitude we take towards food, the companions with whom we share our meals or the mindset in our meal elaboration process should not be undervalued.

Nowadays we are focused on what we eat and not on how we eat it, and the how is a matter worth dealing with. We think about components that we know are harmful and we believe that if we remove this or that our diet will improve. We follow false myths, we extoll some food, we despise others and we fall into trends due to these tremendous confusions. In my talk I intend to put a little light to this matter because I believe there is no such thing as a magic food product but we can optimise our digestion and not settle for pseudo products which often offer lower nutritional value and yet are more expensive and end up being harmful.

Biography

Marina Sala Martín, nutritionist and neuropathic dietitian MTC did her studies in Barcelona, where she began working in a herbalist's office with nutrition consultancy and leading diabetes groups. She travelled to Italy to expand her knowledge in the psycho-emotional aspect. In Rome, she worked as a therapist offering nutritional education conferences with private and external consultation in collaboration with other professionals in the sector. She also gave talks for pregnant women and mothers who are lactating, as well as some about child nutrition. In addition she attended intestinal disorders and overweight cases. She returned to Spain where she continued conducting nutrition conferences and working in pharmacies offering consultation. She also worked in health centers and a polyclinic where she currently leads the nutrition department of the "Clínica Image" attending the pre and post-operative.



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Biological activity and chemical composition of Iraqi black truffle *Terfeziaclaveryi*

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Desert truffles are seasonal and important edible fungi that grow wild in many countries around the world. Truffles are natural food sources that have significant compositions. In this work, the antioxidant, chemical composition, anticancer, and antiangiogenesis properties of the *Terfeziaclaveryi* truffle were investigated. Solvent extractions of the *T. claveryi* were evaluated for antioxidant activities using (DPPH, FRAP and ABTS methods). The extracts cytotoxicity on the cancer cell lines (HT29, MCF-7, PC3 and U-87 MG) was determined by MTT assay, while the anti-angiogenic efficacy was tested using ex-vivo assay. All extracts showed moderate anticancer activities against all cancer cells ($p < 0.05$). The hexane extract inhibited the brain cell line (U-87 MG) with an IC50 of 50 $\mu\text{g/ml}$ and significantly promoted cell apoptosis through the mitochondrial pathway and DNA fragmentation $p < 0.001$. The ethanol extract demonstrated potent antioxidants; DPPH, FRAP, and ABTS with an IC50 value of 52, 48.5 and 64.7 $\mu\text{g/ml}$, respectively. In addition, the hexane and ethyl acetate extract significantly ($p < 0.001$) inhibited the sprouting of microvessels by 100% and 81.2%, at 100 $\mu\text{g/ml}$, respectively. The GC analysis of the most active extract (hexane) showed the presence of several potent phytochemicals such as stigmasterol, beta-Sitosterol, squalene, lupeol, octadecadienoic acid, and oleic acid.



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Effect of a multi-strain probiotic on growth performance, haematobiochemistry, carcass and meat quality traits of Potchefstroom

Judith atela

Egerton University, Kenya

Whereas the use of probiotics is commonplace in commercial production of improved chicken strains, little is known about the impact of these live microbial feed additives in indigenous chickens. The study investigated the effect of a multi-strain probiotic (1.4×10^8 cfu/mL), administered via drinking water on growth performance, blood parameters and carcass and meat quality characteristics of Potchefstroom koekoek cockerels for a period of 12 weeks. A total of 140, 65-week old cockerels were randomly allocated to four experimental diets formulated to have similar caloric and protein levels as follows: 1. negative control diet (NEGCONCON) commercial chicken growers' diet without both antibiotics and probiotics in the water, 2. positive control diet (POSCONANTIB) commercial chicken growers' diet with antibiotics [coxistac & olaquinox] but no probiotics, 3. Negative control diet plus 2.5 mL of probiotics per litre of water (PROB25) and 4. negative control with 5.0 mL of probiotics per litre of water (PROB50). The cockerels had access to water and feed *ad libitum*. Average weekly feed intake (AWFI) and average weekly weight gain (AWG) were used to determine feed conversion efficiency (FCE). A week before slaughter, blood was collected to determine haematological and serum biochemical parameters. Carcass and meat quality parameters were measured after slaughter. There was a significant week \times diet interaction effect on average weekly feed conversion efficiency. At the age of 9 weeks old, cockerels in PROB50 had higher FCE than those in CON and ANTIB groups. However, 14-weeks old cockerels in PROB50 had lower FCE than those in ANTIB. Dietary treatments had no significant effect on overall feed intake, overall weight gain and haemato-biochemical parameters of cockerels. There were no dietary effects in terms of gizzard and spleen weights were similar in cockerels in PROB50, CON and PROB25 cockerels. Cockerels in PROB50 had shorter small intestines than those in CON and PROB25, which did not differ. Treatment PROB50 promoted larger breast weights than PROB25. Treatments ANTIB and PROB50 promoted greater wing and thigh weights than CON and PROB25, which did not differ. There were no significant differences among shank weights were similar of cockerels in PROB50, CON and ANTIB cockerels. Cockerels in treatments meat pH measured after 24 hours was highest in CON and ANTIB birds had the highest pH measured after 24 h followed by those in PROB25 and lastly those in PROB50 birds. Cockerels in CON cockerels had lower cooking losses than those in ANTIB, PROB25 and PROB50 cockerels, which did not differ. Dietary treatments had no significant effect on overall feed intake and overall weight gain. There were no significant differences in terms of FCE across all weeks, except in weeks 9 and 14 of the feeding period. Probiotic supplementation had no significant effect on blood parameters and the size of internal organs, except for small intestines. Cockerels on PROB50 had shorter small intestines compared to those on NEGCON and PROB25, which did not differ. Treatments had no significant influence on carcass characteristics, except on weights of breasts, wings and thighs. Probiotic supplementation had no significant effect on meat colour and meat tenderness, but significantly influenced meat pH and cooking losses. Cockerels on both NEGCON and POSCON had the highest pH measured 24 h after slaughter. Cockerels on NEGCON had the least cooking losses (19.84%) compared to those on POSCON, PROB25 and PROB50, which did not differ. It was, therefore, concluded that probiotic supplementation has a potential to replace antibiotics on diets of Potchefstroom koekoek cockerels. Probiotics supplementation can be used in place of prophylactic antibiotics in Potchefstroom koekoek cockerels.

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Food for life: Challenges and future perspectives

Aysha Sameen

University of Agriculture, Pakistan

Food insecurity, hunger and malnutrition (under nutrition and over nutrition) are global issues leading to increased risk of morbidity and mortality. Food is essential to drive away hunger and malnutrition. It gives us the required energy and sufficient nutrients to grow and develop to be healthy and energetic, to move around, work, exercise, play, think and learn. First 1000 days of life should be of the key priority for researchers and Government as this the most crucial stage of a person's life. Changes occurred in this period are irreversible and sustains to whole life. Cognitive development is closely linked to the dietary practices of mother during pregnancy, breastfeeding and weaning practices. Changes in dietary patterns and life style modifications have tremendously increased the incidence of non-communicable diseases. Nutritional and hygiene awareness among general public can be helpful in reversing the situation. Selection of better food choices and best utilization of available resources can ensure the nutrition as well as food security. Public health care sector, nutraceutical, food industries, print and electronic media can collectively work for the betterment of the situation.

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Replacing Fibromyalgia: A strategic approach through clinical nutrition

Joaquim Lamora Recuero

Physiotherapist, Clinical Psychoneuro immunologist, expert in clinical nutrition, Spain

Introduction: Fibromyalgia (FM) means muscular and fibrous tissue pain (joints and tendons). Features in Fibromyalgia include widespread musculoskeletal pain and painful sensation to pressure upon certain spots (tender points). On a regular basis, people diagnosed with FM show other symptoms such as fatigue, headache, tenderness, altered patterns of sleep and gastrointestinal disorders. Fibromyalgia is frequent within 2 to 6% of the population, especially women between 20 and 50 years old.

Aim: This talk intends to unravel everything clinical nutrition could bring in in order to help any person diagnosed with Fibromyalgia to improve their wellbeing.

Search methodology: A review of the scientific literature of the main databases has been done (Cochrane, Health evidence, Scielo, Pubmed and Scopus).

Findings: From an integrative medicine approach, there are a number of possible causes that increase the likelihood of a person being diagnosed with FM. Numerous deficiencies can be observed in mitochondrial enzymes, including the reduced 3- hydroxi-CoA dehydrogenase, citrate synthase and cytochrome synthase activity. Magnesium levels are reduced to 31%. The increase in oxidative stress and cytokine production (Interleukin-8 y interleukin-6). Vitamin D deficiency, an acknowledged cause of chronic widespread pain, as well as depression, muscular fatigue and lowgrade chronic inflammation are also common in fibromyalgic patients. An important relationship between gastrointestinal disorders is also found, e.g SIBO or Irritable bowel syndrome.

Conclusion: A diet rich in vitamins, minerals and phytonutrients along with a reduction of some foods which could increase intestinal permeability might be crucial in the treatment of Fibromyalgia.

Biography:

Joaquim Lamora Recuero is a physiotherapy graduate. After his studies, he went deep in clinic psychoneuroimmunology studies, afterwards he got the official Integrative Physiology Master by the University of Barcelona and the Nutrition and Health Master by the Open University of Barcelona. He has been treating patients with fibromyalgia and chronic diseases for more than 15 years. Nowadays he also leads the company Nutriscience in Barcelona.

He is a lecturer and teaches workshops to publicize new ways of treating patients with chronic diseases In order to increase their quality of life. Joaquim Lamora has also a blog joaquimlamora.com, followed by more than 5000 users, where he states all his knowledge about health and clinical nutrition.

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Gastric Endoscopic Sleeve Plication (GESP) with a nutritional intervention for the treatment of obesity

Ruiz Pérez, Sonia

Centro Médico Teknon, Spain

The Gastric Endoscopic Sleeve Plication (GESP) is a minimally invasive technique that aims to reduce the volume, capacity and motility of the stomach to treat Obesity. It's done through sutures in the gastric body. The main objective is to show the first weight loss results of the study along with a change in the nutritional habits and physical exercise.

Patients follow a hypocaloric restrictive diet after bariatric surgery during the first 6 weeks to promote healing of the mucosa and gastric muscle layer, and then a personalized diet.

17 patients (age= $45,52 \pm 7,44$) with an initial BMI ($36,79 \pm 2,57$) were selected to be operated with an average weight of $103,62 \pm 17,38$ kg. The protocol to follow once started the intervention consisted of periodic visits with the Nutritionist to assess weight loss through Bioimpedance measurement Tanita (MC 780MA P) and Medical support.

The average weight loss during the first 6 months has been $18,69 \pm 6,76$ kg. The % of Excess Weight Loss was $52,86 \pm 20,25$. All participants lost weight satisfactorily and the feeling of satiety increased significantly.

It's concluded that the intervention contributes to increased satiety and weight loss with minimal complications in recovery and with a positive tolerance of patients to liquids and food.

Biography:

Ruiz Pérez, Sonia joins Teknon Medical Center as a Nutritionist in the Department of Nutrition of the Espinós-Turró Endoscopic Team. She did her career in University Ramón Llull and she continued studying and specializing in metabolic diseases and Obesity, among others areas of nutritional interest. She received her MBA from CEU San Pablo University, and Ph.D. from the University Ramón Llull Program in Education and Sports Sciences. In the course of his PhD he was able to collaborate with Florida State University and their research interest is centered on the impact of strength exercise training and L-citrulline supplementation on arterial function in obesity-related hypertension in older women. In the last years, she is working as a Nutritionist in Endoscopic treatments (Gastric Balloon, POSE, GESP, Aspire device). Her primary research interest is about Nutrition in patients with Obesity subjected an endoscopic treatments. In her free time, she practices dressage and she enjoys nature and animals.



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State preemption: An emerging threat to local sugar-sweetened beverage taxation

Eric Crosbie

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Introduction: Sugar-sweetened beverages (SSBs) are the leading source of added sugars in the diet, and are linked to dental caries, diabetes and obesity. In response, local governments have enacted SSB taxes that reduce consumption, generate revenues, and promote public health. However, the beverage industry is using a strategy called preemption, which limits the authority of localities and is emerging as a threat to enact new SSB taxes.

Methods: We used Crosbie and Schmidt's tobacco state preemption framework to analyze state preemption of local SSB taxes in the U.S.

Results: Since 2017, four states (Illinois, New Mexico, Oregon, and Pennsylvania) have rejected and four states (Arizona, California, Michigan and Washington) have approved state laws preempting local SSB tax policies. Application of the tobacco pre-emption framework reveals that the beverage industry has attempted to secure state pre-emption through front groups, by lobbying key policymakers, inserting preemption language into other legislation, and issuing legal threats and challenges. The public health community has responded by creating awareness of pre-emption through media advocacy, by educating policymakers, mobilizing national collaboration, and expanding networks with the legal community, albeit this still remains in its early stages. State pre-emption of local SSB tax laws suggests early damaging effects: the weakening of local authority, chilling of education and public debate, and slowing local policy diffusion.

Conclusion: Health scholars, advocates and policymakers must learn from the tobacco experience and closely monitor beverage industry activity to proactively prevent state preemption attempts and protect local political autonomy.



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Impact of dietary, socioeconomic, and physical factors on obese and overweight school-children living in sidi-bel-abbes (west of algeria) and ain defla (centre)

Hayat Didaoui*, Kannoun khadidja

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The prevalence of obesity is increasing for any age of human life (adult, child and adolescent). The objective of our study was the impact of dietary, socio-economic, physical activity and lifestyle risk factors on 264 obese children aged between 5 and 11, including 139 children in the Sidi-Bel-Abbes (Western Algeria) and 125 children in the region of Ain Defla (Algerian Center) between 2015-2017.

Some anthropometric measures such as weight, height and BMI were measured, with a questionnaire filled for children and their parents on dietary habits, socio-economic factors and lifestyle. For the classification of obesity and overweight, we used references from the International Obesity Task Force and French reference curves.

The results of our survey indicate that the participation rate was about 33% and 67% for girls and boys in Sidi-Bel-Abbes and 61% and 64% for Ain Defla. Our habits results showed that 34% had breakfast versus 66% who were fasting. More than 76.5% of students who suppressed a meal on the other hand only 23.5% who respected the three meals. Taking biscuits and bread with a rate of 37.5% and 33%. Regarding the consumption of soft drinks and industrial juices accounted for 62.5% and 37.5% respectively. The near majority of the populations preferred the grilled or fried meals of rate estimated at 73%, Conclusion: a positive relationship between obesity and dietary factors. Also, the increase in snacking and the suppression of one meal was an element of the dietary imbalance that could increase the risk of obesity by promoting the consumption of foods with high energy density. An inverse relationship between BMI and physical activity The food and environmental risk factors studied have a remarkable impact on childhood obesity in the two regions studied.

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Phytochemical profile and pharmacological properties of Algerian date fruits (*Phoenix dactylifera* L.)

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In this study, five Algerian date cultivars (*Phoenix dactylifera* L.) were investigated for their antioxidant contents, phenolic profiles, and some pharmacological properties (anti-inflammatory, anti-diabetic, and antioxidant activities). The results showed that *Tanslit* cultivar was the most concentrated in total phenolic compounds and flavonoids with 433.03 and 102.5 mg/100 g DM, respectively. *Tamd johert* cultivar was the richest on anthocyanins (9.83 mg CE/100 g DM). HPLC analysis indicated that *Tamd johert* cultivar contained high flavonoids concentration (8.22 mg/100 g DM) and *Takarmoust* cultivar the highest on phenolic acids (15.64 mg/100 g DM). The results indicated that *litim* cultivar exhibited strong antiradical activity (134.95 mg GAE/100 g DM) also potently inhibited α -amylase activity (35.19%). *Tamdjohert* cultivar exerted the highest reduction of inflammatory mediators (256.003 mg GAE/100 g DM). This study demonstrated that date fruit was a good source of bioactive compounds with an important pharmacological property and can be considered as functional food.

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 Notes:

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Evaluate the efficacy and tolerability of probiotics in Egyptian autistic children

Nayra Shaker Mehanna

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Recently, several studies have correlated the disturbance in the gut with autism spectrum disorder (ASD) and suggested that the gastrointestinal (GI) microflora play a potential role in severity of symptoms in children with (ASD).

The aim of this study is to studying the effect of probiotic on autistic children. Bifidobacterium spp. and lactobacillus spp. were assessed in stool samples of 40 autistic children from autistic clinic in National Research Centre and 20 healthy typical children of similar ages.

This study indicated that the counts of both Bifidobacterium spp. and lactobacillus spp. were significantly lower in the stool of autistic children than that of their control group. The count of bacteria wasn't affected by sex (male or female).

After supplementation of the autistic children with a daily nutritional product fortified with probiotic strains (Bifidobacterium spp.) for 3 months, highly significant increases in the levels of both Bifidobacterium spp. and Lactobacillus spp. were observed in stool of the autistic children. The results showed that the probiotic product led to improve autism scale in childhood (CARS) by 90%, in addition to improve deep sleep in 85% and communicate to speak 32%, and social networking 31.4%. Also, the food reduced children hyperactivity by 25%.

Biography

Emeritus Prof. Dr. Nayra Shaker Mehanna, former head of Dairy Science Department, Achieved PhD in dairy science from faculty of Agriculture, Ain Shams Univ. Post Doctor in Research Center for the development of probiotics bacteria, London Ontario, Canada (2007).

She is a valuable member of the Committee of Food Hygiene Egyptian Authority for Standards & Quality and Dairy Egyptian Authority for Standards and Quality (Ministry of industry). She had established "Production of Human Friendly Bacteria" unit in Food Industry and Nutrition Division - National Research Center and "safety Food" unit. She has more than 60 publications in national and international scientific journals after PhD. Participate in the supervision of master theses and PhD. Principal investigator for many projects from 1995 till now.

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Notes:



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Poster Presentation- Day 02

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The consumption status and changes of sugar containing food among Chinese from 2002 to 2012

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Objective:

1. To analyze the consumption status and changes of sugar containing food of years and Chinese residents from 2002 to 2012.
2. Using data from USDA Database for the Added Sugars Content of Selected Foods (2006) to calculate the added sugar intake and % total energy, then to provide scientific basis for reference intake of added sugar and related policy.
3. To explore and analyze the relationship between Chinese adults added sugar intake and overweight-obesity, then to provide scientific basis for control the status of overweight- obesity.

Subjects and Methods:

Methods

Using dietary data from the Chinese Nutrition and Health Survey in 2002 and the Chinese Nutrition and Health Surveillance in 2010-2012, to analyze 2 years and Chinese consumption proportion, consumption rate, %total energy of sugar containing food, intake of added sugar, % total energy of added sugar and the changes from 2002 to 2012. Using SAS9.4 to fit multilevel logistic regression and to explore the relationship between sugar containing food consumption and overweight-obesity.

Results

General features of sugar containing food consumers:

In 2002, there were 13374 consumers, in 2012, there were 17053 consumers. 35-54 years old urban female are the maximum group consumers in 2002, while 55 over age urban female are the maximum group consumers in 2012.

Consumption of sugar containing food:

The consumption of sugar containing food of Chinese residents in 2002 is 20.0%, the rate in urban and rural residents are 39.7% and 10.6%, the highest consumption rate is 54.2% in urban 2-5 boy; the consumption of sugar containing food of Chinese residents in 2012. Is 26.9%, the rate in urban and rural residents are 39.9% and 14.7%, when divided into four areas, consumption rate in big city, medium/small city, general rural and poor rural show a decreasing tendency, the highest consumption rate is 76.5% in 2-5 girl of big city. Overall, the consumption rate in 2012 is increasing from 2002 by 31.9%.

Consumption of sugar containing food:

From 2002 to 2012, the consumption proportion of urban is higher than rural, female higher than male. In 2002, the 35-54 age group accounts for the most proportion, in 2012, the 55 over age group accounts for the most proportion. The main consumption time is at breakfast, which is 47.4% in 2002 and 41.1% in 2012, and the consumption time has a tendency from dinner time to snack time. The main consumption place is at home, which is 82.6% in 2002 and 83.1% in 2012.

The top three consumption frequency of sugar containing food are bread (average), biscuits (average), steamed rolls (milk) in 2002. The top three consumption frequency of sugar containing foods are bread (average), yoghurt (average), biscuits (average) in 2012. From 2002 to 2012, the consumption frequency of fast food, sugar-sweetened beverage, dairy products is increasing, while consumption frequency of cake and dessert, sugar and sweets is decreasing.

Total energy of sugar containing food:

The Total energy of sugar containing food in 2002 is 9.5% (95% CI=9.3%,9.6%), urban higher than rural ($P<0.0001$), the highest percentage of Total energy is 13.5% in 2-5 age group urban female in 2002. The percentage of Total energy of sugar containing food in 2012 is 9.1% (95% CI=9.0%, 9.2%), urban higher than rural ($P<0.0001$), the highest percentage of Total energy is 15.08% in 2-5 age group urban female in 2012. On the whole, the percentage of Total energy of sugar containing food in 2012 is higher than 2002 ($P<0.0001$).

From 2002 to 2012, when divided into eight types of sugar containing food. The percentage of Total energy of sugar-sweetened beverage, dairy products, fast food is increasing, the percentage of Total energy of sugar-sweetened beverage increased from 0.39% to 0.55%, dairy from 0.50% to 0.87%, fast food from 2.62% to 4.18%. Total energy of cake and desserts decreased from 3.96% to 2.03%, sugar and sweets from 0.44% to 0.19%, other cereal sweets and starch products from 1.38% to 1.12%, fruits and products from 0.10% to 0.05%, beans and products essentially constant.

Consumption and percentage of total energy of added sugar:

Total consumption of added sugar in 2002 is higher than 2012 ($P<0.0001$). Consumption of added sugar in 2002 is 25.6 g/d, rural higher than urban, male higher than female, the maximum consumption is 35.8 g/d in 18-34 age group rural male. Consumption of added sugar in 2012 is 18.8 g/d, rural higher than urban, male higher than female; the maximum consumption is 24.7 g/d in 12-17 age group rural male. According to food sources of added sugar, the main source is cakes and desserts in 2002 and 2012, which is 13.3 g/d and 5.9g/d, added sugar from sugar-sweetened beverages, dairy and products and fast food is increasing from 2002 to 2012.

The percentage of Total energy of added sugar in 2002 is higher than 2012 ($P<0.0001$). The Total energy of added sugar is 5.03% in 2002, Urban lower than rural male lower than female, and it's decreasing as the age increasing. The percentage of Total energy of added sugar is 4.13 % in 2012, Urban lower than rural male lower than female, and except 55 over age group; it's decreasing as the age increasing. The main source of added sugar in 2002 and 2012 are both cakes and desserts, the percentage of Total energy are 2.52% and 1.25%. From 2002 to 2012, percentage of Total energy of added sugar from sugar- sweetened beverages, dairy and products, fast food are all increasing, sugar-sweetened beverages from 0.57% to 0.77%, dairy from 0.36% to 0.57%, fast food from 0.49% to 0.80%, The percentage of Total energy of added sugar from the other five kinds food are all decreasing (all $P<0.05$).

Relationship between intake of sugar containing food and overweight-obesity:

The multilevel logistic regression model is used to analyze the relationship between adults' intake of sugar containing food and overweight-obesity. The results indicate after control the influence of area, year, education level, age, gender, exercise, total energy intake, intake of sugar containing food is positively associated with overweight-obesity, OR=1.055 P=0.02

Conclusion:

The consumption rate is increasing from 20.0% in 2002 to 26.9% in 2012, urban higher than rural, female higher than male. The distribution of consumer has a tendency to urban and older people, gap narrowed between genders. The main consumption time is at breakfast, which is 47.4% in 2002 and 41.1% in 2012, the consumption time has a tendency from dinner time to snacktime. The main consumption place is at home, which is 82.6% in 2002 and 83.1% in 2012. Percentage of Total energy of sugar containing food decreasing from 9.5% in 2002 to 9.1% in 2012. Consumption of added sugar is decreasing from 25.6g/d in 2002 to 18.8 g/d in 2012. Percentage Total energy of added sugar is decreasing from 5.03% in 2002 to 4.13% in 2012, added sugar from sugar-sweetened beverages, dairy and products, fast food is increasing. Compared with other developed countries, consumption of Chinese residents is relatively low, which is under the WHO recommends intake level 10%. The exploring analyses indicate that people who consume sugar containing food have a 9.2% higher risk of overweight-obesity than those who don't consume sugar containing food, OR=1.055 P=0.02. Overall, from 2002 to 2012, consumption rate of Chinese residents is increasing, while consumption and % Total energy are both decreasing, the younger have a higher consumption level. There's positive association between sugar containing food and overweight-obesity in Chinese adults.

Biography

Liyun Zhao, female, was born on January 10, 1964 in Zhijiang County, Hunan Province, graduated from the Department of Preventive Medicine, Hunan Medical College in 1986, and received her master's degree from China CDC in 2007. She is the director of the Nutrition Surveillance Department of the National Institute for Nutrition and Health of Chinese CDC, and also a professor and master's supervisor. She is mainly engaged in nutrition epidemiology investigation, population nutrition intervention and nutrition education. From 2010 to 2017, she chaired the major public health projects, including "China Nutrition and Health Surveillance" and "China Chronic Diseases, Nutrition and Health Surveillance" covering 250,000 people in 205 monitoring sites and 577 monitoring sites in 31 provinces respectively.

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Notes:

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FODMAP and intolerance in Irritable Intestine Syndrome (IIS)

Marta del Moral Pairada

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84% of patients with IIS diagnosis relate the symptoms to the ingestion of certain foods

FODMAP: what about?

- Fermentable Oligosaccharides: fructooligosaccharides, galactooligosaccharides
- Disaccharides: lactose
- Monosaccharides: fructose
- Polyalcohols: sorbitol, mannitol, maltitol, xylitol

FOODS DISCOURAGED BY HIGH CONTENT IN FODMAP:

• Fructose:

Fruits: apple, ripe banana, mango, pear, canned fruit, watermelon. Sweeteners: fructose (syrups), fruit juices, dehydrated fruit, honey, corn syrup.

• Lactose:

Cow's milk, sheep and goat. Yoghurt Cheeses: soft one's, custard, ice cream

• Fructans:

Vegetables: garlic, onion, eggplant, cabbage, broccoli, Brussels sprouts, escarole, asparagus, leeks, beets. Cereals: wheat, rye. Fruit: cherimoya, persimmon, watermelon

• Galactans:

Pulses: beans, chickpeas, lentils

• Polyols:

Fruit: avocado, apricot, cherry, plum, litxi, apple, lentil, nectarine, pear, watermelon.

Vegetables: cabbage, mushrooms, corn, green pepper. Sweeteners: sorbitol, mannitol, xylitol.

FODMAP: Allowed foods:

• Fruits: banana, blue and red blueberry, grapefruit, melon, kiwi, lemon, lime, mandarin, orange, passion fruit, papaya, pineapple, raspberries, strawberries, rhubarb. With moderate consumption: avocado, cherry, coconut, blackberry.

• Vegetables: Olives, chives, chicory, celery, bamboo shoots, soy shoots, zucchini, pumpkin, card, chives, green beans, green beans, lettuce, corn, potatoes, cucumbers, pepper, raves, tomato, carrots .

• Spices: basil, chile, cilantro, ginger, mint, oregano, thyme, rosemary, parsley.

• Dairy: Milk, lactose free, rice drink, soybean, cibada. Cheeses: cured cheeses, Brie, Camembert. Yoghurt without lactose, Substitutes of ice creams: sorbets and jellies.

• Sweeteners: Sucrose (sucrose) in small quantities, glucose, artificial sweeteners that do not end up in -ol, maple syrup, molasses.

• Cereals: Rice, chives, millet, polenta, quinoa, buckwheat.

DIETARY REPERCUSSIONS LOWED IN FODMAP:

- The low diet in FODMAP requires careful dietary follow-up, and over time it can cause alterations physiological in the intestinal microbial.

Biography

Marta del Moral Pairada She born in Barcelona and she studied Nursing between 1991-94 at the Sant Pau's Hospital Nursing School. She started to work as a nurse at the same Hospital. In 1998 she worked for three years in Lloret de Mar at the Public Primary Health Care System. In 2001 she came back to Barcelona and she was Nursing Supervisor during five years at CAPSBE (Consortid'AtencióPrimària Barcelona Eixample. After this she studied a Management Master and collaborated with the Nursing's students of the University of Barcelona. At 2014 she have been named by the Universitat de Barcelona as tutor for CommunityNursing Care Specialty. From last academic course, she named by the same University associate professor in the same University.

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Vitamin D status predicts grip strength in adults

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Objective:

Grip strength is an indicator of physical functioning that decreases with age. Decrease grip strength is a predictor of adverse outcomes in older adult such as disability, mobility problems, falls, or mortality. Low serum concentrations of 25 (OH)D have been associated with poor physical function include grip strength. Furthermore, it has not been confirmed whether this possible relationship occurs in the Chinese population. The aim of this study determined the association of vitamin D status (25-hydroxy vitamin D, 25(OH)D) with grip strength in adults Chinese.

Methods

The study analyzed cross-sectional with 4,720 participants in Tianjin, China. Grip strength was measured using an electronic handgrip dynamometer (EH101. CAMRY, Guangdong, China). Vitamin D was determined by the serum 25(OH)D concentrations which were measured an enzyme immunoassay. The grip strength as the dependent variable. Serum 25 (OH)D concentration in quartiles was used as the independent variable. The difference among serum 25(OH)D categories was examined using analysis of variance (ANOVA) for continuous variables and logistics regression for the proportional variable. Analysis of covariance (ANCOVA) was used assessing the association between serum 25(OH)D concentration and grip strength with adjustment for the confounder variables.

Results

Among 4,720 participants make up 36.25% people at the age of above 50 years and 63.75% people at the age of below 50 years. For participants who have age above 50 years, after adjustment for confounded variable, the means (95%CI) of handgrip strength(HGS) per body weight (kg/kg) across serum 25(OH)D concentration quartiles were 0.46, (0.40, 0.52); 0.47, (0.41, 0.53); 0.47, (0.42, 0.53); 0.47, (0.42, 0.53) ($p_{trend}=0.01$), and the means (95%CI) of HGS were 31.7, (27.9, 36.0); 32.5, (28.6, 36.9); 32.6, (28.7, 37.1); 32.8, (28.9, 37.3) ($p_{trend}=0.02$). There was not significant differences in serum 25(OH)D concentration quartiles both HGS per body weight and HGS with participants below 50 years.

Conclusion:

The low vitamin D was significantly related to low grip strength in subjects who have age above 50 years, but not in people have age below 50 years. These results suggested that vitamin D It is suggested that vitamin D supplement maybe reduce the risk of functional limitation, fractures and disability including sarcopenia.

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Isolation and identification of bacterial microflora from pre and post pasteurization of cow's milk from dairy plant

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Biofilms are communities of microorganisms that adhere to surfaces in contact with food that may cause contamination of processed products. The objective of this study is the evaluation of the pasteurization process through the evaluation of the bacterial microflora of the biofilm formed on the pre- and post-pasteurization lines of a milk processing plant. 88 isolates are characterized and identified from morphological characters and biochemical tests (API 20 E and API staph). 82 Gram-negative isolates have been identified as *Pseudomonas*, *Aeromonas*, *Ochrobacterium*, *Myroides*, *Pantoea*, *Leclercia*, *Brukholderia*, *Rahnella*, *Ochrobacterium*, *Serratia*, *Chryseobacterium*, *Klebsiella*, *Acinetobacter*, *Enterobacter*, Gram positive isolate were identified as *Staphylococcus*, *Micrococcus*, *Kocuria*. Evaluation of the ability of the adhered microflora to form the biofilm shows only 28 isolates capable of producing slime. Evaluating the effectiveness of pasteurization processes against biofilms on stainless steel surfaces has revealed bacterial biodiversity with a dominance of Gram-negative bacteria. Finally, this study emphasizes that knowledge of microorganisms attached to dairy surfaces can help develop strategies to improve optimal operational parameters (Time / T C °) for pasteurization processes.

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Characterization and molecular identification of aerobic endospore forming bacteria isolated from dairy environments

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The spore forming bacteria can be easily introduced into the processing facilities because of their ubiquitous character, and present thereafter a challenge to be eliminated because they can resist to high temperatures of pasteurization and to cleaning and disinfection agents, which leads to serious hygiene problems and economic losses due to food spoilage and equipment impairment.

The assessment of spore niches at various stages of manufacture or processing may serve as a useful tool for shelf life management and improvement of the pasteurization and CIP programs.

In our study, samples have been taken by swabbing the surface of equipments which are in direct contact with the final product, i.e. pipes, tanks and filling machine. The microbial cells were released by vortexing the tubes containing swabs for 30 seconds.

The total microflora was enumerated on PCA. Then, the samples were heat-treated at 80°C for 10 minutes to select for the heat resistant strains, and at 100°C for 30 minutes for the selection of highly heat resistant strains; they were plated on TSA-Starch and incubated at 6, 30 and 55°C for the selection of psychrotrophic, mesophilic and thermophilic spore formers.

The obtained colonies were purified and strains were identified by microscopic observation, catalase test then, they were identified by molecular means M13-RAPD PCR.

The number of aerobic spore forming bacteria varied between 10^0 and 10^3 UFC/mL with the highest number at the filling machine, mesophilic strains were the most predominant on all the sampled surfaces.



Notes:

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Square wave adsorptive cathodic stripping voltammetric determination of malathion pesticide in food samples

Jingjing Wang

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Two highly sensitive, simple and selective square wave cathodic stripping voltammetric (SW–CSV) and differential pulse cathodic stripping voltammetric (DP–CSV) determination methods for malathion are presented. The two methods SW–CSV and DP–CSV are based on selective accumulation of malathion-copper(II) complex from the aqueous solution (pH 2-3) at a hanging mercury dropping electrode (HMDE) and computing the cathodic peak current of the adsorbed complex species at -0.42 V vs. Ag/AgCl reference electrode. The reduction mechanism of the electrode reactions of copper(II)–malathion complex was properly assigned. The influence of pH, current function, deposition time, accumulation potential, pulse height, frequency changes and copper concentrations were examined. The surface coverage of the electroactive species (Γ) at the Pt, Au and HMDE electrodes was also studied. The linear dynamic ranges of SW–CSV and DP–CSV were 1.03×10^{-10} – 2×10^{-7} and 7.5×10^{-9} – 2×10^{-7} mol L⁻¹, respectively. In the SW–CSV, the lower limits of detection (LOD) and quantification (LOQ) were 3.1×10^{-11} and 1.03×10^{-10} mol L⁻¹, respectively. In the DP–CSV, the LOD and LOQ values were found equal to 3.97×10^{-10} & 1.33×10^{-9} mol L⁻¹, respectively. The developed SW–CSV method was successfully applied for the analysis of trace concentrations of malathion in spiked water, vegetables, soil, solid and liquid pesticidal formulations with % recoveries \pm relative standard deviation of 97.0-107.5 \pm 0.30-1.39. The SW–CSV method was validated by the standard GC-MS method with satisfactory recovery percentages at 95% confidence interval. The SW–CSV method is highly reliable, fast, inexpensive, selective and routine analysis method as compared to conventional methods.

Biography:

Jingjing Wang is a Master's Student in the school of Food and Biological Engineering, Jiangsu University. Her research is oriented towards development of toxic contaminants in foodstuff using spectrochemical (surface-enhanced Raman scattering (SERS)) and electrochemical techniques. She has published articles in journals like Sensors and actuators B: Chemical, Journal of the science of food and agriculture and Microchemical journal. She is currently solving the problems with the retention mechanism of 4-aminothiophenol and its influence on the spectroscopic SERS response with the appearance of b2 type abnormal bands.



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Immature persimmon (*Diospyros kaki*) extract improves obesity in a high-fat diet-induced obesity mouse model

Seon-A Yoon*, Weon-Jong Yoon, Ho Bong Hyun, Bo Ram Go, Dae-Ju Oh, Yong-Hwan Jung and Young-Min Ham

Jeju Biodiversity Research Institute, South Korea

Obesity is a major cause of various metabolic syndromes; it impairs quality of life and is associated with substantial increases in morbidity, premature mortality, and healthcare costs. Herbal medicines have become the subject of interest for the management of obesity because they are natural in origin, are cost effective, and have minimal side effects.

In this study, we examined the anti-obesity effect of immature persimmon ethanol extract (IPE) by analyzing changes in body weight, visceral fat weight, blood biochemicals, and fat production-related gene expression levels in a high-fat diet (HFD)-induced obesity mouse model. Results showed that IPE administration significantly reduced body weight gain: HFD+IPE mice gained less weight than those in the non-IPE-treated control HFD group. The anti-obesity effect of IPE consumption was also reflected by triglyceride, total cholesterol, and high-density lipoprotein cholesterol levels. Leptin, a hormone that regulates appetite suppression, was significantly inhibited by the addition of IPE: that is, leptin levels were lower in the HFD+IPE group than in the HFD group. In contrast, the levels of adiponectin, a hormone that promotes insulin sensitivity and inhibits inflammation, were higher in the HFD+IPE group than in the HFD group; but differences in adiponectin levels between the HFD+IPE and HFD+IPE group were not significant. To determine whether IPE reduces adipocyte differentiation, we measured the mRNA expression levels of key transcription regulators. IPE dose-dependently downregulated the expression of peroxisome proliferator-activated receptor gamma and CCAAT/enhancer-binding proteins. IPE treatment also significantly inhibited adipokines and the expression of sterol regulatory element-binding protein-1, which is involved in lipid biosynthesis in the liver. Taken together, our data suggest that IPE exerts its anti-obesity effect by inhibiting adipogenic gene expression, and by regulating lipid metabolism in mice that are fed high-fat diets.

Biography:

Seon-A Yoon is currently the researcher of Jeju Biodiversity Research Institute (JBRI) in Jeju Technopark (JTP), Korea. She earned her master's degree from Jeju National University, where she performed researches on molecular biology related to metabolic diseases. She participated in various research projects using Jeju biological resources since starting studies. Yoon has published 15 papers and 5 patents, and she annually makes academic presentations in the field of food and cosmetics. In recent years, she has been focusing on unripe fruit (putgyul and immature persimmon) as an "health functional food" product.



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A study on the immunostimulatory effect of *Litsea japonica* fruit extract

Weon-Jong Yoon*, Seon-A Yoon, Young-Min Ham and Dae-Ju Oh

Jeju Biodiversity Research Institute, Jeju Technopark, South Korea

The immune response, divided into innate immune response and acquired immune response, is one of the important biological defense actions to counter the pathological effects of external infectious substances, which are not components of the body. The innate immune response is elicited in all tissues of the body, and macrophages, which play a leading role in biodefense mechanisms, are mainly required for the phagocytosis of infectious pathogens such as bacteria and viruses, as well as of senescent normal cells and cancer cells. Active macrophages have the ability to counter various cytokines such as nitric oxide, interleukins, and TNF- α , and induce morphological changes in cells such as enhancement of growth and migration ability. In addition, natural killer cells (NK cell), which are known as typical working cells capable of killing cancer cells, are known to protect the host and play an important role in combating cancer and infectious diseases. The immune response acts as the primary defense against infectious agents. In this study, we tried to evaluate the in vivo immunostimulatory activity of *Litsea japonica* fruit extract and to examine the possibility of using it as a functional material with an immunostimulatory effect.

Biography:

Weon-Jong Yoon is the head of Jeju Techno Park (JTP) Jeju Biodiversity Research Institute (JBRI). He earned his doctorate degree from Jeju National University, where he performed researches related to functional material development. Since its inception, he has been involved in various research projects using biological resources in Jeju. Weon-Jong Yoon issues 90 articles and 60 patents, and holds an academic conference in the field of food and cosmetics every year. In recent years he has focused on *Litsea japonica* fruit as a source of “healthy functional food”.

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IL17 mediated stimulation of Paneth cells in the control of intestinal homeostasis

Dominik Filipp*, Tomas Brabec, Matous Voboril, Aigerim Aidarova, Jan Kubovciak, Jiri Novotny and

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Paneth cell (PC) antimicrobial products, such as enteric defensins (EDs) are crucial for the control of intestinal microbiota that, while dysregulated may promote intestinal inflammation and result in conditions such as inflammatory bowel disease (IBD). While it was proposed that immune system regulates Paneth cell via IL-17, the precise mechanism is not completely clear. Although the *ex vivo* stimulation did not affect Paneth cell antimicrobials, the *in vivo* ablation of IL-17 receptor (IL17R) in the intestinal epithelium diminished their expression. To address this discrepancy, we compared the expression profile of PCs from mice carrying a PC-specific ablation of IL-17R and their wt littermates. The results indicate that IL-17 acts directly on PCs and induces the expression of PC antimicrobials. To assess the physiologic outcome of this regulatory axis, we compared the transcriptomes of the whole ileum tissue and PCs from mice the same mice, thus defining PC intrinsic and extrinsic effects. This analysis showed the increased expression of inflammation associated genes in ilea of mice with IL-17R deficient PCs. To investigate the clinical relevance of these findings, we used publically available transcriptomic data from control and IBD patients. We found a significant correlation between expression of EDs and IL-17 in healthy individuals while in IBD patients this correlation was abrogated. Collectively these new findings establish the IL-17 driven stimulation of PCs as a crucial process in the maintenance of intestinal homeostasis.



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