

2017 BUDAPEST CONFERENCE ABSTRACT

May 10-12, 2017

NARIC Food Science Research Institute

Budapest, Hungary



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2017 Budapest Conference Introductions

Welcome to CBEEES 2017 conference in Budapest, Hungary. The objective of the Budapest conference is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and Development Activities in Nutrition and Food Sciences, Food and Agricultural Engineering .

2017 6th International Conference on Nutrition and Food Sciences (ICNFS 2017)

Papers will be published in one of the following journals:



International Journal of Food Engineering (IJFE, ISSN: 2301-3664), and be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest , CABI.



International Proceedings of Chemical, Biological and Environmental Engineering (IPCBE, ISSN: 2010-4618), which is indexed by EBSCO, Chemical Abstracts Services (CAS), CABI, CNKI, WorldCat, Google Scholar, Ulrich's Periodicals Directory, Crossref, and Engineering & Technology Digital Library.

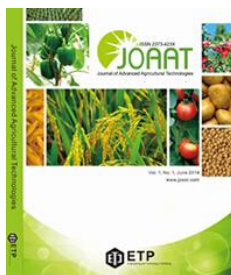
Conference website and email: <http://www.icnfs.org/>; icnfs@cbees.org

2017 3rd International Conference on Food and Agricultural Engineering (ICFAE 2017)

Papers will be published in one of the following journals:



International Journal of Food Engineering (IJFE, ISSN: 2301-3664), and be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest , CABI.



Journal of Advanced Agricultural Technologies (JOAAT, ISSN:2301-3737), and all papers will be included in the Ulrich's Periodicals Directory, Google Scholar, Engineering & Technology Digital Library, Crossref.

Conference website and email: <http://www.icfae.org/>; icfae@cbees.net

Presentation Instructions

Instructions for Oral Presentations

Devices Provided by the Conference Organizer:

Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)

Digital Projectors and Screen

Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):

Regular Oral Presentation: about **12** Minutes of Presentation and **3** Minutes of Question and Answer

Keynote Speech: about **25** Minutes of Presentation and **5** Minutes of Question and Answer

Plenary speech: about **15** Minutes of Presentation and **5** Minutes of Question and Answer

Instructions for Poster Presentation

Materials Provided by the Conference Organizer:

The place to put poster

Materials Provided by the Presenters:

Home-made Posters

Maximum poster size is A1

Load Capacity: Holds up to 0.5 kg

Best Presentation Award

One Best Oral Presentation will be selected from each presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on May 10 and May 11, 2017.

Dress code

Please wear formal clothes or national representative of clothing.

Keynote Speaker Introductions

Keynote Speaker I



Prof. Raquel de Pinho Ferreira Guiné

Polytechnic Institute of Viseu, Portugal

Prof. Raquel P. F. Guiné has a degree in Chemical Engineering (1991), a MsC in Engineering Science (1997) and a PhD in Chemical Engineering (2005), all at the Faculty of Science and Technology of the University of Coimbra (Portugal). She has a Teaching Habilitation in Food Science (2015) from the University of Algarve (Portugal). She has a Certificate of Proficiency in English (CPE, 1986) by the University of Cambridge (United Kingdom). Her major fields of study include food engineering and food processing. She has been a University Teacher since 1994, being presently a Coordinating Professor with Habilitation at the Food Industry Department in Polytechnic Institute of Viseu – IPV (Portugal). She has been President of the Scientific Board; President of the Assembly of Representatives; Director of Licence Course, Director of MsC Course, and presently is Head of Department all at ESAV, IPV (Portugal). She is author of 14 books, 34 chapters, 142 research papers and 171 conference proceedings. She has authored 104 oral communications and 94 posters presented at scientific conferences. Selected published books: Vitamin C. Dietary Sources, Technology, Daily Requirements and Symptoms of Deficiency (New York, USA: Nova Science Publishers, 2013); Engineering Aspects of Cereal and Cereal-Based Products (Boca Raton, USA: CRC Press, 2013); Handbook of Fruit and Vegetable Flavors (New York, USA: John Wiley & Sons, 2010). Her research interests include areas such as food engineering, food processing, food properties, food chemistry and nutrition. Prof. Guiné is a member of the Portuguese Chemical Society (SPQ) and Asia-Pacific Chemical, Biological & Environmental Engineering Society (CBEES). Awards: 2011 – Research Project distinguished (Project lead by her); 2011 – Certificate of Excellence of paper published in Food and Bioproducts Processing in 2010; 2013 – First Prize in the National Contest sponsored by the CAP relative to a new food developed; 2015 – Certificate of Excellence for oral communication presented at 2nd International Conference on Food and Nutrition Technology (ICFNT 2015), Jeju Island, Republic of Korea; 2015 – Best Scientific Paper CI&DETS Published in 2014, in the Research Group in Food, Agrarian and Veterinary

Sciences; 2016 – Certificate of Best Oral Presentation for communication presented at the 2nd International Conference on Food and Agricultural Engineering (ICFAE 2016), Copenhagen, Denmark; 2016 – Third Prize in the Regional Contest Poliempreende relative to a new entrepreneurship idea. (URL:www.raquelguine.pt)

Topic: “*The Drying of Foods and its Effect on the Physical-Chemical, Sensorial and Nutritional Properties*”

Raquel P. F. Guiné

Abstract—Drying of foods is an ancient practice that has been adopted to preserve foods beyond their natural shelf life. Among the numerous methods used for food conservation, drying is unquestionably the most ancient but still very much used nowadays. The process started with the exposure of foods to the sun, to extract from them a great proportion of the water, thus contributing for their conservation. The traditional solar drying with direct exposure to the sun had many disadvantages and presently more modern methods are used, such as hot air drying, spray drying, lyophilization, infrared, microwave or radiofrequency drying, osmotic dehydration or many combined processes. In drying water is removed from the food, thus reducing its availability for degradation reactions of chemical, enzymatic or microbial nature.

The main objectives of drying include to preserve foods and increase their shelf life; avoid the need for use of refrigeration systems for transport and storage (expensive); reduce space requirements for storage and transport; diversify the supply of foods with different flavours and textures, thus offering the consumers a great choice when buying foods.

Many foods can be preserved through drying, but their organoleptic and nutritional properties are greatly altered as compared to the fresh counterparts. Thus, during drying it is of interest to minimize chemical changes, such as enzymatic and non-enzymatic browning, and to maximize nutrient retention, such as macronutrients (proteins, sugars, fibres, ...), micronutrients (vitamins, minerals, ...) or bioactive compounds (phenolic compounds, carotenoids, isoflavones, ...). One effect frequently observed when drying foods is shrinkage, which considerably affects their structure and texture.

This work describes the most relevant drying methods and advances in drying technology and the effects of this operation on the attributes of the dried foods, including physical characteristics, chemical components and nutritional value or sensory properties like aroma, texture and colour.

Keynote Speaker II



Prof. ANDERS PERMIN

Innovation and Sector Development, DTU

Educational background: MSc. in Veterinary Medicine (1990). The Royal Veterinary and Agricultural University, Denmark (KVL). PhD (1997) in Veterinary Microbiology KVL. Appointed Assistant Prof. (1997) with pedagogic exam (1998) Appointed Adjunct Associate Professor in April 2002. Diploma in management, coaching and project administration, (2004-2005). M-MBA (2012) Present employment: Chief Consultant, Innovation and Sector Development, DTU.

Previous: Deputy Director, National Food Institute, Danish Technical University.

Head of Department, Human Health and Safety, DHI covering areas related to toxicology and microbiology including disease control.

Topic: *“From biowaste to biovalue. Examples from the Danish Agricultural industry”*

Anders Permin

Abstract—The recent economic crisis, environmental concerns, a rapidly growing human population and political issues have created the need for industrial innovation which can lead to improved economic growth, new job opportunities, enhanced competitiveness and not at least a change from fossil based industry to a more green industry. Replacement of fossil

resources for the production of bio-chemicals, materials, polymers and fuels can be achieved through efficient utilization of renewable resources and exploitation of renewable carbon from existing biomass and side-streams. A future sustainable industrial development will rely on the efficient exploitation of agricultural biomasses and bi-products, aquatic biomass and various other waste streams.

Food supply chain waste residues constitute a major resource for the development of bio-based products. The successful transition to the bio-economy can be achieved by restructuring current manufacturing practices. For instance, in the food industry, the traditional meaning of processing is associated with processing of the raw material into a food product with optimum structure, properties, nutritional requirements, quality and safety. However, food processing could also provide viable alternative schemes that combine food production with minimization of energy consumption and water usage as well as valorization of waste and by-product streams. An important area is the extraction of valuable ingredients from the bi-products.

As another example, the vision is that any sustainable industrial sector should rely on bio-based and biodegradable polymers for packaging applications. Bio-based polymers could include those polymers that are entirely or partly produced from renewable green resources. The extraction of compounds with antioxidant and antimicrobial activity from by-products could for instance be incorporated into the biodegradable packaging articles produced via fermentation using food waste streams. The benefits of such practices include the development of processes with lower carbon footprint, the production of biodegradable packaging materials and possibly the improvement of shelf-life of food products through the adding of intelligent ingredients.

Development of an optimal resource utilization could combine the extraction of high value compounds with production of fermentation products. The integration of chemical production in existing food industries using food waste can also provide a low cost source of biomass. The development of large-scale fermentative production of commodity chemicals is mainly hindered by the high cost of raw materials used in traditional fermentation processes, and here the available biomass sources are of interest.

Food waste is produced along any stage of the supply chain extended from the agricultural site to the processing plant and including the retail market. Food waste is also produced at the consumer segment where up to 1/3 of the food is wasted. Although the capacity of food waste production is significant, the variability in composition and the seasonal production of case-specific food waste are important drawbacks that might hinder industrial implementation. Current food supply chain waste streams are exclusively processed in basic waste management strategies as fuel, animal feed, for the production of compost and fertilizer as well as anaerobically digested to biogas. Importantly a higher value is achieved if selected food waste residues can be used for the extraction or production of value added products. In the light of the above premises, this presentation aims to show a number of cases focusing on integrated valorization of food supply chain waste for the production of a variety of products ranging from biomaterials to chemicals and ingredients from the Danish industrial segment.

Keynote Speaker III



Prof. Hami Alpas

Department of Food Engineering, Middle East Technical University, Ankara, Turkey

Prof. Hami Alpas is a Food Engineer and also holds an MBA degree from Dept. of Business Administration METU on Total Quality Management. He has served as a “visiting scholar” in 1996 and 1998 at University of Wyoming, USA; as a “visiting scientist” in 2001 and 2002 at Ohio State University, USA and as a “visiting professor” in 2006, 2007 and 2008 at University of Bordeaux I, France on the topic of Non-Thermal Food Processing Technologies (HHP). His main research areas are: Unit Operations in Food Engineering, Non-thermal Food Processing Technologies, Food Quality, Food Safety and Food Security through Total Food Protection. He is an expert in Food Defense training activities via NCFPD (USA). He has supervised 5 Ph.D and 11 M.Sc. thesis in Food Engineering Department. He has 78 international journal articles (SCI) and over 1200 citations (ISI-Web of Sci; h-factor 20) as well as close to 60 academic presentations in 40 different international meetings. He has completed 15 national, 4 international projects including EU/JRC, CNRS-EGIDE and NATO ARW/ATC projects. He has authored 11 chapters in internationally edited books and has edited 3 international books by Springer. He has also organized and co-directed 3 NATO-workshops (ARW-ATC). He is currently the co-director of EU-FP7 project on “Plant Food Security”.

Topic: “*Use of Nuclear Magnetic Resonance (NMR) relaxometry as a tool to assess seed characteristics induced by Osmotic Stress (OS), Ultrasound (US) and High Hydrostatic Pressure (HHP)*”

Kübra Ünal, Hami Alpas, Hakan Aktaş, and Mecit Halil Öztop

Abstract—Nuclear magnetic resonance (NMR) relaxometry was used to study the influence of osmotic stress (OS), ultra-sonication (US) and high hydrostatic pressure (HHP) induced effects on cell membrane integrity of tomato seeds. For osmotic stress, seeds were exposed to 10, 20 and 30% NaCl solutions. For the ultrasonication treatment, seeds were subjected to ultrasonication for 5, 10 and 20 minutes after dilution with distilled water. HHP treated tomato seeds were subjected to pressure levels from 100 to 500 MPa at 20 °C for 5 to 15 min. NMR relaxometry was used to determine the proton relaxation components of the seed and obtain information about damage on the cell membrane integrity of the seed treated by the three treatments. NMR relaxation spectra of tomato seed gave four peaks each corresponding to different water compartments due to multi-exponential relaxation behavior of the plant cell. Results showed that, seeds exposed to OS revealed higher T_2 values because of lysis of cell wall and diffusion of more water into cell. US caused merging and decrease in the T_2 values of the peaks indicating the disintegration effect of ultrasonication in the cell. HHP treatment caused increase in the T_1 and T_2 values of the seeds indicating that the water in the cell has gone into free state due to damage in the cell caused by pressure. Seeds exposed to different treatments were analyzed by Scanning Electron Microscope (SEM) to determine the damage to the cell. These results have proved that NMR relaxometry as an effective method to analyze the cell membrane integrity of tomato seeds exposed to different novel treatments.

Plenary Speaker I



Prof. Youling L. Xiong

University of Kentucky, USA

Dr. Youling Xiong, Distinguished University Professor, received his B.S., M.S., and Ph.D. from, respectively, Jiangnan University, Oregon State University, and Washington State University. After completion of postdoctoral training at Cornell University in 1990, he joined the University of Kentucky as an assistant professor and was timely promoted to associate professor then full professor. He teaches food chemistry, protein science, and meat science, and leads in an internationally renowned research program on food protein chemistry and applications. His most notable contributions to the scientific community and food industry are fundamental knowledge obtained through pioneering and discovery research on functional and nutritional food additives, muscle protein oxidation, and peptide antioxidants. Professor Xiong has mentored more than 70 graduate students and postdoctorals, published 280 research papers in scientific journals and books, and given 120 invited/keynote presentations throughout the world. As a career achiever, he has been awarded the Bertebos Prize (highest award of the Royal Swedish Academy of Agriculture and Forestry), Distinguished Research Award and Achievement Award (American Meat Science Association), Lectureship Award (IFT Food Chemistry Division), Young Scientist Award (American Chemical Society), Yangtze Scholar Award (Chinese Ministry of Education), and many university-wide accolades. Dr. Xiong is an elected Fellow of IFT, ACS AGFD, and IAFoST. He currently serves as a Scientific Editor of Journal of Food Science and Associate Editor of Food Bioscience.

Topic: “*Steric Role of Interfacial Protein in the Oxidative Stability of Oil-In-Water Emulsions*”

Youling Xiong

Abstract—Proteins are amphiphilic macromolecules that exhibit affinity for both lipids and water. At the oil/water interface, the adsorbed proteins act as a physical barrier and create a hydration layer to prevent oil droplets from coalescence. Comminuted meat batters, whipped creams, and soymilk are examples of emulsion products where proteins function as a stabilizer. The role of a protein membrane, in comparison with small surfactants such as tween 20 and lecithin, is beyond its emulsifying activity. The presence of radical-scavenging as well as reducing and metal ion-chelation groups within a protein molecule lends itself to chemical antioxidant potential. Interestingly, the antioxidative capacity of proteins is significantly accentuated when they are located at the oil/water interface, indicating steric hindrances to reactive oxygen and non-oxygen species. In our studies that compare antioxidant activities of muscle, soy, and milk proteins distributed in the continuous aqueous phase versus proteins located at the surface of emulsion oil droplets, we consistently observe stronger efficacy of interfacial proteins. This is manifested by the more pronounced oxidative changes in interfacial proteins (carbonyl formation, sulfhydryl loss, intrinsic fluorescence attenuation, as well as aggregation) than proteins in the aqueous phase which, in effect, spares unsaturated lipids from oxidative attack. Confocal laser scanning microscopy (CLSM), total internal reflection fluorescence (TIRF), as well as cryo-transmission electron microscopy (CTEM) provide physical evidence for such radical-detering effect of the interfacial protein membrane. Structural and rheological characteristics of the membrane and the hydrated interface can be modulated through the modification of the protein structure and manipulation of the surrounding ionic environment.

Plenary Speaker II



Prof. Dragiša Savić

Faculty of Technology in Leskovac, University of Nis, Serbia

Dragiša Savić is full Professor in Food Technology and Biotechnology at Faculty of Technology in Leskovac, University of Niš, Serbia. He received PhD in Biochemical Engineering in 1997, and the professional experience has been carried out at Faculty of Technology in Leskovac, where he has been researcher, assistant and professor in subjects related to industrial microbiological processes. Since 2014, he has been engaged as professor on Faculty of Technical Sciences in Kosovska Mitrovica, and Higher Business School in Leskovac. So far, he has been mentor of 3 PhD student and numerous graduate and MSc students.

He held the position of Head of Department of Food Technology and Biotechnology (2005-2010), followed by Vice-dean for academic affairs (until 2015). In University of Niš bodies, he has participated as member of Council and Senate (2012-2015), and since 2014, he was appointed for Director of Centre for Quality Improvement on University of Niš.

In particular, his main expertise is related to the investigation of microbiota in the processes at laboratory, pilot and industrial scale, i.e. fermented milk products (cheeses, yogurt, kaymak) and recently biofuels (bioethanol, biodiesel and biogas). The results of the research have been published in the reviewed international (so far, more than 25) and national (10) journals, and chapters in the international books (8), as well as in numerous conference papers. He has been reviewer of several international and national journals, as well as member in program committees of national and international conferences.

So far, he has participated in 4 international projects (EU funded through CEI, IPA and Tempus programs) and 10 national (in one as chief manager), momentarily in 3 national and 1 international project. Also, he is a Member of Serbian Society of Microbiology and Serbian Chemical Society.

Topic: “*Tunable Diode Laser Absorption Spectroscopy - a contactless and non-invasive way for gas monitoring in food industry*”

Dragiša Savić, Bojana Danilović, Luca Poletto, Lorenzo Cocola, Massimo Fedel

Abstract—The measuring the concentration of gases (O₂, H₂O, CO₂) based on Tunable Diode Laser Absorption Spectroscopy inside food closed containers is reviewed in this paper. The advantages of this technique are: measuring in real time, selectivity, non-invasivity (contactless) and with no effect on the sample no matter of pressure, temperature and velocity of the sample. The package container transparency of minimum 5% is the only limitation for the application of the method. The technique has been already applied in food industry: bottling industry (determination of oxygen and carbon-dioxide level in the production of sparkling wines and soft drinks; measurement of pressure level in filling lines for leak and sealing control and closure tightness) and in modified atmosphere packaging (monitoring of quality of gas mixture in the packages of fruits, cheeses...). Also, the technique offer possibilities to be applied in the food surveillance by monitoring gas content on the critical points in the food chain where food spoilage microorganisms produce detectable gases (for instance, CO₂). So, the gas level could be a good indicator to recognize contamination at an early stage, as well as an indicator of the quality and inappropriate production process or storage of food products which can be helpful in the prevention of the economic losses

Brief Schedule for Conference

Day 1	<p>May 10, 2017 (Wednesday) 9:00~18:05 Venue: NAIK ÉKI meeting room, NARIC Food Science Research Institute Arrival Registration, Keynote Speech, Conference Presentation, Poster Session</p>
	<p>Afternoon Conference (Venue: NAIK ÉKI meeting room)</p>
	<p>Opening Remarks 13:00~13:10 Keynote Speech I 13:10~13:40 Plenary Speech I 13:40~14:00 Session 1 14:00~15:30 6 presentations-Topic: "Food Science and Management"</p>
	<p>Coffee Break & Group Photo Taking 15:30~15:50</p>
	<p>Session 2 15:50~18:05 9 presentations-Topic: "Food Chemistry and Detection" Poster session 13:00~18:05</p>
	<p>May 11, 2017 (Thursday) 8:50~17:20 Venue: NAIK ÉKI meeting room Arrival Registration, Keynote Speech, Conference Presentation, Poster Session</p>
	<p>Morning Conference</p>
Day 2	<p>Venue: NAIK ÉKI meeting room Opening Remarks 8:50~9:00 Keynote Speech II 9:00~9:30 Keynote Speech III 9:30~10:00 Plenary Speech II 10:00~10:20</p>
	<p>Coffee Break & Group Photo Taking 10:20~10:45</p>
	<p>Session 3 10:45~12:15 6 presentations-Topic: "Agriculture and Biotechnology"</p>
	<p>Lunch 12:20~13:30 Venue: Restaurant</p>
	<p>Afternoon Conference</p>
	<p>Session 4: 13:30~15:15 Venue: NAIK ÉKI meeting room 7 presentations-Topic: "Food Safety and Nutrition"</p>
	<p>Coffee Break 15:15~15:35</p>
	<p>Session 5: 15:35~17:20 Venue: NAIK ÉKI meeting room 7 presentations-Topic: "Food Processing"</p>
	<p>Dinner 18:00 Venue: Restaurant</p>
	<p>Day 3</p>
<p>May 12, 2017 (Friday) 9:00~17:00 One Day Visit & Tour</p>	

Tips: Please arrive at the Conference Room 10 minutes before the session begins to upload PPT into the laptop.

Detailed Schedule for Conference

May 10, 2017 (Wednesday)

Venue: NAIK ÉKI meeting room, NARIC Food Science Research Institute

9:00~18:05	Arrival Registration, Keynote Speech, Conference Presentation, Poster Session
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Note: (1) The registration can also be done at any time during the conference.

(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.

(3) One Best Oral Presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on May 10 and May 11, 2017.

Afternoon, May 10, 2017 (Wednesday)

Venue: NAIK ÉKI meeting room, NARIC Food Science Research Institute

13:00~13:10	<p style="text-align: center;">Opening Remarks Prof. Dr. Csaba Gyuricza The National Agricultural and Research and Innovation Center, NARIC, Budapest, Hungary</p>	
13:10~13:40		<p style="text-align: center;">Keynote Speech I Prof. Raquel de Pinho Ferreira Guiné Polytechnic Institute of Viseu, Portugal Topic: <i>"The Drying of Foods and its Effect on the Physical-Chemical, Sensorial and Nutritional Properties"</i></p>
13:40~14:00		<p style="text-align: center;">Plenary Speech I Prof. Youling L. Xiong University of Kentucky, USA Topic: <i>"Steric Role of Interfacial Protein in the Oxidative Stability of Oil-In-Water Emulsions"</i></p>
14:00~15:30	<p style="text-align: center;">Session 1 6 presentations-Topic: <i>"Food Science and Management"</i></p>	
15:30~15:50	<p style="text-align: center;">Coffee Break & Group Photo Taking</p>	
15:50~18:05	<p style="text-align: center;">Session 2 9 presentations-Topic: <i>"Food Chemistry and Detection"</i></p>	

Session 1

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, May 10, 2017 (Wednesday)

Time: 14:00~15:30

Venue: NAIK ÉKI meeting room

Session 1: 6 presentations- Topic: “Food Science and Management”

Session Chair: Prof. Raquel de Pinho Ferreira Guiné

S2001 Presentation 1 (14:00~14:15)

Gluten-free bread: a case study

Paula M. R. Correia, Mariana F. Fonseca, Lu í M. Batista, Raquel P. F. Guiné

CI&DETS/ESAV, Polytechnic Institute of Viseu/Department of Food Industry, Viseu, Portugal

Abstract—Physicochemical and sensorial characteristics of a possible commercial gluten-free bread (GFB) made with a new gluten-free flour were studied, as compared to a regular wheat bread, which was also analysed as Control sample. Results show that GFB presented high values of moisture and water activity, 36.56% and 0.96. This bread presented high density (0.38 g/ cm³) comparing to regular bread (0.25 g/ cm³), being these results reinforced by image analysis of alveoli. GFB was whiter, with less color intensity, meaning that a* and b* color parameters were lower than control, which was confirmed by sensorial evaluation results. GFB was soft and easily chewable (75.0 N and 70.0 N, respectively for hardness and chewiness), which, once again, was corroborated by the sensorial results. The overall assessment done by the consumer panellist to GFB was 4.1 (on a scale from 1 to 10), while the control bread presented 5.5. It could be concluded that the new flour formulation is suitable for GFB production, with characteristics comparable with the regular bread.

Afternoon, May 10, 2017 (Wednesday)

Time: 14:00~15:30

Venue: NAIK ÉKI meeting room

Session 1: 6 presentations- Topic: “Food Science and Management”

Session Chair: Prof. Raquel de Pinho Ferreira Guiné

M0012 Presentation 2 (14:15~14:30)

The Use of Edible Flowers in Human Food: Sensory Analysis of Preparations

Natália K. Simoni, Fernanda F. Santos, Thainá A. Andrade, Anna Lúcia C.H. Villavicencio and Maria Elisabeth M. Pinto-e-Silva

University of São Paulo, São Paulo, Brazil

Abstract—Considering edible flower’s various uses in culinary, health benefits, and its low consumption, is essential to evaluate the sensorial aspects of preparations with it to verify the acceptance of these ingredients. Were used three samples of salads with leaves and flowers, which were evaluated by thirty-five volunteers who analyzed it according to hedonic characteristics and indicated their preference. Attributes as color, texture, aroma and overall aspects, in all samples, obtained scores that characterized acceptance of the preparations, while attributes as flavor showed a higher number of rejection or indifference. Between the samples analyzed, the one that presented minor rejection over flavor was the sample with higher degree of irradiation, perhaps by present sweeter flavor, because of higher irradiation exposure. This study shows that population is receptive to consume edible flowers, but it needs to improve disclosure and alternative recipes to attract the consumers.

Afternoon, May 10, 2017 (Wednesday)

Time: 14:00~15:30

Venue: NAIK ÉKI meeting room

Session 1: 6 presentations- Topic: “Food Science and Management”

Session Chair: Prof. Raquel de Pinho Ferreira Guiné

M0029 Presentation 3 (14:30~14:45)

Antimicrobial Resistance of *Staphylococcus aureus* Isolated from Food Contact Surfaces (Cutting Boards) at Selected Food Premises in Selangor, Malaysia

Shakira Mohd Sahil, Shu’Aibu Isa, Nur Amira Rosli and **Nor Ainy Mahyudin**

Faculty of Food Science and Technology, Universiti Putra Malaysia, Serdang, Selangor, Malaysia

Abstract—Cutting board is one of the most common food contact surfaces in a domestic kitchen which pose a threat of becoming a vector for the transmission of food borne illness. This study assessed the microbial quality of cutting board surfaces at 45 food premises in Sri Serdang, Selangor, Malaysia. Isolates obtained from surface sampling on cutting boards were identified using standard method and tested for antimicrobial resistance against 11 antibiotics (CLSI, 2014). A total of 24 isolates were identified as *Staphylococcus aureus*. All isolates were found to be resistant to amoxicillin and penicillin G. Resistance was also common to nalidixic Acid (83.3%) and ciprofloxacin (66.7%). 100% of the isolates were susceptible to 5 antibiotics namely; gentamicin, ceftriaxone, sulphafurazole, streptomycin and cefotaxime. All isolates showed resistance to 2 or more antibiotics. These results reflect the potential food safety risk. The data provide a baseline for future monitoring of antimicrobial resistance in *S. aureus*.

Afternoon, May 10, 2017 (Wednesday)

Time: 14:00~15:30

Venue: NAIK ÉKI meeting room

Session 1: 6 presentations- Topic: “Food Science and Management”

Session Chair: Prof. Raquel de Pinho Ferreira Guiné

S0025 Presentation 4 (14:45~15:00)

Factors affecting the consumption of soy-based foodstuffs in Hungary

Viktória Szűcs and Erzsébet Szabó

Hungarian Chamber of Agriculture/Directory of Food Industry, Budapest, Hungary

Abstract—According to the most optimistic forecasts, alternative sources have to be found to cover the protein needs of expanding population. Soy is a potential ingredient for substitute of meat. However, it is an ‘unconventional’ ingredient in Hungary and mainly consumed in Asian restaurants. Therefore, identification of the consumption frequency and exploration of the factors influencing the present and future (intention) consumption of soy-based foodstuffs are reasonable. For this purpose a quantitative survey was conducted with Hungarian participants (N= 411) having mixed diet. Theoretical models of the present and future soy-based foodstuff consumption were developed and validated by the results of the survey (path analysis). Consumption frequency of soy sauce was found to be notable, while the popularity of other soy products was much lower. Results of the model validation pointed out that health-related factors and soy-related attitude seem to be key element in actual soy product consumption, while future actions are mainly influenced by more detailed knowledge of health benefits and the dominance of sustainable thinking in Hungary. Findings of our study might be useful for product development and communication activities as well.

Afternoon, May 10, 2017 (Wednesday)

Time: 14:00~15:30

Venue: NAIK ÉKI meeting room

Session 1: 6 presentations- Topic: “Food Science and Management”

Session Chair: Prof. Raquel de Pinho Ferreira Guiné

S3004 Presentation 5 (15:00~15:15)

Measuring Energy Consumption in Gari Processing Activities by Southern Nigerian Women

OLUTAYO VICTOR OLAYENI

Department of Agricultural Engineering, University of Ibadan, Nigeria

Abstract—Gari is one of the commonest food and food substance in Southern Nigeria. it is largely produced in Southern Nigeria and widely consumed by West African countries in general. This work was undertaken to study the energy expenditure by women in Nigeria to produce Gari. Data were collected by direct measurement of height, weight and monitoring of heart beat using stethoscope during operations. In producing gari, a mean energy expenditure of 4.17 kJ/min was spent on cassava peeling and 3.17 kJ/min on mash cake sieving. Frying using traditional method, improved methods I and II of frying expended 9.75, 2.67 and 1.25 kJ/min of energy respectively. The main activities involved in gari production can be considered to be light grade of work in physiological studies with improved method II, the most appropriate in gari frying in terms of increased capacity and greater efficiency.

Afternoon, May 10, 2017 (Wednesday)

Time: 14:00~15:30

Venue: NAIK ÉKI meeting room

Session 1: 6 presentations- Topic: “Food Science and Management”

Session Chair: Prof. Raquel de Pinho Ferreira Guiné

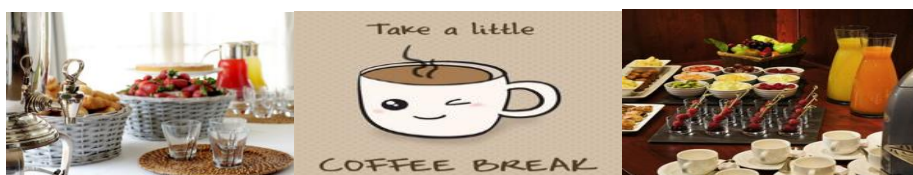
M0005 Presentation 6 (15:15~15:30)

Sugar Sweetened Beverages Consumption Behavior and Knowledge among University Students in Saudi Arabia

Hala Hazam Al Otaibi

Department of Food Sciences and Nutrition. College of Agriculture and Food Science. King Faisal University, Saudi Arabia

Abstract—Sugar Sweetened Beverages (SSBs) represent a significant dietary source of add sugars in the Saudi population and a common practice among 75% of Saudis. The current study aimed to identify the consumption pattern of SSBs as daily and weekly among university students, to assess students knowledge about the actual calories in one can or bottle of SSBs associated with their consumption. Across sectional study conducted utilizing pretested self-administered questionnaire among 414 undergraduate students at King Faisal University (KFU) in Al-Ahssa, Saudi Arabia. About 40% of students reported consuming SSBs once daily, and almost one third of them (27.5%) two or more daily. The majority of them consumes soft drinks weekly (69.6%) then energy drinks (40.6%) and sport drinks was less popular drink (25.6%). Multivariate logistic regression analyses predicted greater SSBs consumption among students how had incorrect answer about regular SSBs kilocalories content (OR 1.66, 95% CI 1.13 to 3.69), and less SSBs consumption among students in fourth year, class rank (OR 0.72, 95% CI 0.42 to 1.23). SSBs consumption was prevalent among student's and knowing the kilocalories content of SSBs associated with a lower consumption of SSBs health education programs aim to reduce the consumption and increase students knowledge in order to have healthier choices are needed.



15:30-15:50

Coffee Break

Session 2

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

S0005 Presentation 1 (15:50~16:05)

Molecular Relaxation of Freeze-dried Broccoli as Measured by Low Frequency Nuclear Magnetic Resonance (LN-NMR) and its Relationship to the Glass Transition

Sithara Suresh, Nasser Al-Habsi and Mohammad Shafiur Rahman

Department of Food Science and Nutrition, College of Agricultural and Marine Sciences, Sultan Qaboos University, P.O.Box-34, Al-Khod-123, Muscat, Oman

Abstract—It is important to determine the stability of foods during processing and storage. Water activity and glass transition concepts are most commonly used to determine the stability of foods. Recently attempts are being made to incorporate the concept of water mobility in order to provide a more complete picture of food stability. Low Frequency Nuclear Magnetic Resonance (LN-NMR) was used to measure the different pools of protons (i.e. molecular mobility) in freeze-dried broccoli containing un-freezable water. The moisture content and temperature were varied from 0.01 to 0.25 g/g sample and -80 to 190°C, respectively. Three pools of protons were determined from transversal T_2 (i.e. spin-spin) relaxation times. These were: T_{2b} (i.e. tightly pools of protons associated with macromolecules), T_{21} (i.e. protons in the strongly bound water with the solids) and T_{22} (i.e. protons in the weakly bound water). The T_{2b} showed three linear segments and a peak when plotted as a function of temperature, while T_{21} and T_{22} showed two segments. The critical temperatures for the segments were determined and compared with the onset glass transition (T_{gi}) and solids-melting (T_{mp}) temperatures as measured by Differential Scanning Calorimetry (DSC). Two critical temperatures (T_{rn} and T_{rm}) and one peak temperature (T_p) from the plot of T_{2b} versus temperature were identified. The values of T_{rn} showed lower than the onset glass transition; however the difference between T_{2b} and T_{gi} increased with the increase of moisture content. In addition, water caused much higher effects on the glass transition as compared to the proton mobility. It was also observed that T_{cp} was related to the solids-melting temperature.

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

S0022 Presentation 2 (16:05~16:20)

Development of a Quartz Crystal Microbalance with Impedance Measurement with Bio-Gold Nanoparticles for Enhanced Sensitivity

Ádám G. Nagy, Nóra Adányi, István Szendrő, George Szakacs, Viktória Bócai, István Lagzi and Eszter Tóth-Szeles

Food Science Research Institute, NARIC, Hungary

Abstract—Immunosensor methods are worldwide applied methods for detecting and quantifying food- and feed contaminants, toxicants or pathogens in food matrices. Immunosensor methods are rapid and cost-effective methods that could reach high sensitivity and selectivity. In this study, chemically and biologically produced gold nanoparticles (AuNPs) were utilized to enhance signal sensitivity in case of a quartz crystal microbalance with impedance (QCM-I) measurement system. Biological production of AuNPs is a green technology; therefore its importance relies on less environmental impact. Results showed that biologically produced AuNPs are comparable with chemically produced nanoparticles in terms of signal sensitivity enhancement. Several biologically produced AuNPs were used with different origin and different median particle size. Therefore each of them has different physical properties. Results showed that bio AuNPs can enhance sensor sensitivity and also can enhance the accuracy of the measurement by decreasing the standard deviation of the signals; the effect depends on the physical properties of the applied bio AuNP.

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

S0023 Presentation 3 (16:20~16:35)

Microelements Content of Swiss Chard Derived from Montenegro

Ivana Milašević, Ljubica Ivanović, Dijana Đurović, Ana Topalović, Mirko Knežević and Boban Mugoša

BIO-ICT (center of excellence), Podgorica, Montenegro

Abstract—Essential microelements are one of the most important parameters of food crop quality. In Montenegro, swiss chard is frequently used crop because it is an important source of various minerals and other compounds which are necessary for normal physiological functions. The aim of this paper was to determine the microelements content (Cu, Zn, Cr, Fe and Mn) in samples of Swiss chard grown under the controlled conditions. It was analyzed 30 samples of swish chard, which was grown at Podgorica, Montenegro. All samples were collected from open field. Total concentrations of microelements were determined using ICP-OES. The results are expressed as mg per kg of dry swiss chard. The results show that the measured value ranged from 15,12mg/kg to 28,36 mg/kg for Cu; from 28,84 mg/kg to 61,84 mg/kg for Zn; from 0,68 mg/kg to 2,44 mg/kg for Cr; from 239,72 mg/kg to 464,60 mg/kg for Fe and from 191,68 mg/kg to 435,48 mg/kg for Mn. The obtained results confirmed that chard has valuable amounts of essential minerals. In comparisons with other green vegetables, chard derived from Montenegro is a good source of microelements especially of Fe, Mn and Cr so it should be included in locally diet. This work has been supported by the Ministry of Science of Montenegro and the HERIC project through the BIO-ICT Centre of Excellence (Contract No. 01-1001).

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

S0024 Presentation 4 (16:35~16:50)

Evaluation of Macroelements in Swiss Chard Montenegrin Origin Produced under Optimal Conditions of Growth

Ljubica Ivanović, Ivana Milašević, Dijana Đurović, Ana Topalović, Mirko Knežević and Boban Mugoša

BIO-ICT, Center of excellence in Montenegro, Montenegro

Abstract—Green leafy vegetables (GLV) are excellent source of micronutrients such as minerals and phytochemicals which are important for essential physiological functions. Swiss chard as GLV, has been recognized as a cheap source of both essential macro and microelements. The aim of this study was to evaluate the macroelements content (Na, K, Mg, Ca and P) of swiss chard derived from Montenegro. The thirty swiss chard samples were collected from „Biotechnical faculty“ (Lješkopolje plain) during June 2016. During swiss chard growing period, the optimal agrotechnical conditions for the growth were ensured. Fresh swiss chard samples were subjected to wet digestion and then, the macroelements were determined by inductively coupled plasma-optical emission spectroscopy (ICP-OES, SPECTRO ARCOS, Kleve, Germany). The results were expressed in g per 100 g of fresh weight. For the macroelements potassium was found in the highest concentrations in chard samples. The mean value of K in chard samples was 0.53g per 100g of swiss chard. The mean values for Na, Ca, Mg and P were as follows: 0.18 g, 0.22 g, 0.11g and 0.05g per 100g, respectively. The 30 g of fresh swiss chard, which is usually served amount, provided 4.57% for K, 2.25% for Na, 6.60% for Ca, 8.25% for Mg and 1.50% for P of the daily value.

The obtained results showed that swiss chard from Montenegro is a good source of tested elements especially Na, Ca and Mg and it could be considered as an inexpensive but a good source of essential macroelements. This work has been supported by the Ministry of Science of Montenegro and the HERIC project through the BIO-ICT Centre of Excellence (Contract No. 01-1001).

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

M0043 Presentation 5 (16:50~17:05)

Use of Magnetic Resonance Imaging (MRI) and Low Resolution NMR Relaxometry to Follow Physicochemical Changes in Foods, Detect Quality and Asses Stability of Colloidal Systems

Mecit H. Oztop, Elif Akbas, Sevil Cikrikci, Emrah Kirtil, Selen Guner, Baris Ozel

Middle East Technical University, Ankara, Turkey

Abstract—Magnetic Resonance Imaging (MRI) is a technique that is mostly used to visualize internal structure and most commonly used in medicine. With the advancement on low frequency, low resolution and low cost benchtop systems there has been a substantial increase on the use of these systems. With MRI it is possible to analyze without disturbing the sample. Image acquisition in MRI is based on excitation of protons in a sample through a radiofrequency pulse and acquiring and encoding the signal in different planes. NMR relaxometry is based on measurement of T1, T2 relaxation times either separately or at the same time through the use of 2D sequences. Self-Diffusion coefficients due to Brownian motion could also be measured through stimulated spin echo or pulse gradient spin echo sequences. In this study, findings of a couple studies that used NMR Relaxometry and Magnetic Resonance Imaging will be discussed shortly. Significant findings on the use of NMR for the design of capsaicin based nanoemulsions; oil migration in chocolate confectionery products, polymer water interactions in hydrogels, stability of liposome systems and investigation of surfactant behavior of macromolecules will be explored.

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

S0012 Presentation 6 (17:05~17:20)

Monitoring of bisphenol A and nonylphenol in local and seasonal foods in Taiwan

Wei-Hsiang Chang, Shou-Chun Liu, Chung-Feng Hung, Yi-Ting Kao, Ya-Chen Hsu, Shu-Yao Yang and Ching-Chang Lee

Research Center of Environmental Trace Toxic Substances/ Department of Environmental and Occupational Health, National Cheng Kung University, Taiwan

Abstract—Monitoring of food contamination from bisphenol A and nonylphenol is a necessary process for the consumers' risk assessment. A method for the quali-quantitative analysis of bisphenol A (BPA) and nonylphenol (NP) by liquid chromatography electrospray tandem mass spectrometry (LC-MS/MS), was performed and validated for their determination in 250 food samples. Samples were collected major traditional markets or the supermarkets in the towns of origin. The detection rate of the analytes showed both BPA and NP in 92.4% of all samples. Detected levels of BPA ranged from <0.14 to 49.4 ng/g and NP ranged from 0.32 to 918 ng/g in twelve food categories. On the basis of measured concentrations and general daily ingestion rate of twelve food categories, the probable daily intake of BPA and for Taiwanese population was calculated.

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

S0021 Presentation 7 (17:20~17:35)

OWLS based nanosensors for agro-environmental and food safety

Nóra ADÁNYI, István SZENDRŐ and András SZÉKÁCS

Food Science Research Institute, National Agricultural Research and Innovation Centre,
Budapest, Herman Ott ó út 15., Hungary

Abstract—With globalized trade of food commodities, food safety and related environmental safety issues have become a central concern not only at national/regional levels, but all over the world. Consumers are concerned about food-borne pathogens and their toxic substances, including mycotoxins, as well as chemicals, including residues of pesticides and veterinary drugs. Environmental pollution may also lead to contamination of food/feed commodities grown in affected land. For the quick and reliable detection of hazardous substances, new types of sensors based on evanescent wave optical techniques on the rise to detect food-borne contaminants. Our results, obtained by Optical Waveguide Lightmode Spectroscopy (OWLS) based label-free immunosensors used for determination of different chemical contaminants in food responsible for the risk of food poisoning, are presented. Measuring methods were investigated for the determination of herbicide active ingredient trifluralin and biomarker protein vitellogenin for monitoring the pollution with endocrine disrupting chemicals, as well as for different mycotoxins (aflatoxin, zearalenone, deoxynivalenol) and microbials. High specificity/selectivity of the sensitised surface coupled with high sensitivity of OWLS detection gives the possibility to develop immunosensors and microbial sensors in most cases with definitely lower limits of detection than those in traditionally used immunoassays in direct/competitive formats.

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

M0040 Presentation 8 (17:35~17:50)

Effect of Carrageenans on Thermal Denaturation and Glass Transition Temperatures of Meat Proteins

Esen Eyiler Yilmaz and Halil Vural

Akdeniz University, Korkuteli Vocational School, Antalya Turkey

Abstract—This study involves the investigation of how different levels of κ , λ and ι -carrageenan (CGN) with and without addition of salt (NaCl) effected the thermal properties of meat proteins. The thermal denaturation (T_p) and glass transition temperature (T_g) of proteins were determined by using differential scanning calorimetry. Three T_p values were observed for minced meat which were attributed to myosin, sarcoplasmic proteins and actin. Addition of NaCl to the minced meat decreased the denaturation temperatures of myosin and actin on the other hand increased the T_p of sarcoplasmic proteins. ι CGN increased the T_p values of all the proteins with and without NaCl and this increase was more significant when the level of added ι CGN was increased. κ CGN decreased the T_p values of actin and myosin with and without salt addition. λ CGN addition without NaCl increased the T_p values of the proteins when compared to the control. If NaCl was added along with λ CGN T_p values of myosin and actin were decreased, T_p values of sarcoplasmic proteins were increased. Addition of different additives at different concentrations decreased the T_g values. It is accepted that changes in the denaturation temperatures of the proteins is an indication of interactions between hydrocolloids and proteins.

Afternoon, May 10, 2017 (Wednesday)

Time: 15:50~18:05

Venue: NAIK ÉKI meeting room

Session 2: 9 presentations- Topic: “Food Chemistry and Detection”

Session Chair: Prof. Youling L. Xiong

M0041 Presentation 9 (17:50~18:05)

Quality Characteristics of Chicken Wieners Formulated with Grapeseed Oil

Emel KAYNAKCI (Cengiz) and Birol Kılıç

Akdeniz University, Department of Cooking, Antalya Turkey

Abstract—Meat is an essential part of healthy and well-balanced diet since it has a great amounts of high quality protein, heme. The study investigated the grapeseed oil (GSO) usage as fat replacer in chicken wieners and determined the effects of GSO on cooking loss (CL), proximate composition, texture, fatty acids, cholesterol and sensory properties. Wieners were also analysed for pH, thiobarbituric acid reactive substances (TBARS), color during 30 days storage at 4 °C. Five different wieners were manufactured by replacing 0 (control), 25 (25GSO), 50 (50GSO), 75 (75GSO) and 100 (100GSO) of beef fat by GSO. Results indicated that GSO did not affect proximate composition and cholesterol content ($p>0.05$). There were differences among treatments regarding hardness ($p<0.05$). The use of GSO caused an increase in softness compared to control ($p<0.05$). GSO improved fatty acid profile by lowering the percentages of SFA. While control group had 45.22 % SFA, it was reduced remarkably by adding GSO and PUFA was increased from 22.05 to 39.56. Color, pH and TBARS were effected by GSO incorporation. Using GSO resulted in receiving lower sensory scores for taste and smell compared to control ($p<0.05$). However, there were no differences between control and 25GSO for general acceptability. This study concluded that beef fat can be replaced with GSO up to 25 % without posing any quality problem.

May 11, 2017 (Thursday)

Venue: NAIK ÉKI meeting room

<p>8:50~9:00</p>	<p style="text-align: center;">Opening Remarks Dr. Zsuzsanna Cserhalmi NAIK Food Science and Research Institute, Budapest, Hungary</p>
<p>9:00~9:30</p>	<div style="display: flex; align-items: center;">  <div style="text-align: center;"> <p>Keynote Speech II Prof. ANDERS PERMIN Innovation and Sector Development, DTU Topic: <i>“From biowaste to biovalue. Examples from the Danish Agricultural industry”</i></p> </div> </div>
<p>9:30~10:00</p>	<div style="display: flex; align-items: center;">  <div style="text-align: center;"> <p>Keynote Speech III Prof. Hami Alpas Middle East Technical University, Metu_ Food Eng. Dept, Ankara, Turkey Topic: <i>“Use of Nuclear Magnetic Resonans (NMR) relaxometry as a tool to assess seed characteristics induced by Osmotic Stress (OS), Ultrasound (US) and High Hydrostatic Pressure (HHP)”</i></p> </div> </div>
<p>10:00~10:20</p>	<div style="display: flex; align-items: center;">  <div style="text-align: center;"> <p>Plenary Speech II Prof. Dragiša Savić Faculty of Technology in Leskovac, University of Nis, Serbia Topic: <i>“Tunable Diode Laser Absorption Spectroscopy - a contactless and non-invasive way for gas monitoring in food industry”</i></p> </div> </div>
<p>10:20~10:45</p>	<p style="text-align: center;">Coffee Break & Group Photo Taking</p>
<p>10:45~12:15</p>	<p style="text-align: center;">Session 3: 8 presentations-Topic: <i>“Agriculture and Biotechnology”</i> Venue: NAIK ÉKI meeting room</p>
<p>12:15~13:30</p>	<p style="text-align: center;">Lunch</p>
<p>13:30~15:15</p>	<p style="text-align: center;">Session 4: 7 presentations-Topic: <i>“Food Safety and Nutrition”</i> Venue: NAIK ÉKI meeting room</p>
<p>15:15~15:35</p>	<p style="text-align: center;">Coffee Break & Group photo</p>
<p>15:35~17:20</p>	<p style="text-align: center;">Session 5: 7 presentations-Topic: <i>“Food Processing”</i> Venue: NAIK ÉKI meeting room</p>
<p>18:00</p>	<p style="text-align: center;">Dinner</p>

Session 3

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Morning, May 11, 2017 (Thursday)

Time: 10:45~12:15

Venue: NAIK ÉKI meeting room

Session 3: 6 presentations- Topic: “Agriculture and Biotechnology”

Session Chair: Prof. ANDERS PERMIN

S0009 Presentation 1 (10:45~11:00)

Combined Effects of Stocking Density and Feeding Dose on the Growth Rate of Subadult Common Carp (*Cyprinus carpio*)

Ming-Chao Lin, Yan-Xiang Qiu and Ching-Kun Kuon

General Education Center, Nanhua University, Chiayi, Taiwan

Abstract—In order to understand current state of the thermal sensation and environment control strategy in different climate zones of China, a questionnaire survey was conducted on the internet during extreme weather in summer. The questions in the survey were designed based on ISO 7730 and previous literatures on adaptive thermal comfort. A total of 927 valid questionnaires were acquired, which involved respondents from 29 provincial-level administrative regions of China in different climate zones. The result, which is based on the compilation of responses from the survey, indicates that the occupants living in the hot summer and cold winter zone are more dependant on the air conditioner, and occupants living in south of the hot summer and cold winter zone are more adaptable to extreme weather in summer. The most common adaptive behavior is reducing clothes for all the investigated zones. Compared with male respondents, more female respondents would like to use hand fans to improve their thermal comfort. This paper provide speaking proof that different thermal comfort standard is needed for different climate zones in China.

Morning, May 11, 2017 (Thursday)

Time: 10:45~12:15

Venue: NAIK ÉKI meeting room

Session 3: 6 presentations- Topic: “Agriculture and Biotechnology”

Session Chair: Prof. ANDERS PERMIN

S0018 Presentation 2 (11:00~11:15)

A Simulation Study on Environmental Conditions of a Greenhouse for Heating System

Youn Cheol Park and Lei Song

Department of Mechanical Engineering, Jeju National University, Jeju, Korea

Abstract—Recently, considering the energy efficiency of the heating system in agricultural area, clean energy such as geothermal and solar energy has received much attention. To study the effects of solar energy, outdoor air temperature and wind speed on inside air temperature in the plastic greenhouse, a model for forecasting the greenhouse air temperature was established in this study on the basis of the energy and mass balance theory. In this study, a simulation program is developed which is written by Engineering Equation Solver (EES). EES is very convenient and shortcut to call thermal properties, which provides favorable base for simulation. According to the results of simulation, the error of the simulation results with the experiment is less than 5%. The temperature inside greenhouse increased with the rising of quantity of solar radiation or outdoor temperature. However, the temperature inside greenhouse is reduced with the rising of wind speed of outside air.

Morning, May 11, 2017 (Thursday)

Time: 10:45~12:15

Venue: NAIK ÉKI meeting room

Session 3: 6 presentations- Topic: “Agriculture and Biotechnology”

Session Chair: Prof. ANDERS PERMIN

S2004 Presentation 3 (11:15~11:30)

Research Achievements on Mulberry for Fruit Production in Korea

Gyoo Byung Sung, Hyun Bok Kim, Kwang Young Park, Yong Soon Kim and Wan Taek Ju

National Institute of Agricultural Sciences/Department of Agricultural Biology, RDA, Wanju, Korea

Abstract—With the rapid increase of mulberry fruit production in Korea, the demand for mulberry cultivars, techniques and disease and pest control methods suitable for fruit production have been stronger. To meet the demand for cultivar suitable for fruit production, we have been breeding 10 varieties using mulberry genetic resources preserved at National Institute of Agricultural Sciences (NIAS). In Korea, more than 600 accessions of both indigenous and exotic origin of mulberry species were maintained at National Institute of Agricultural Sciences(NIAS). NIAS is responsible for maintaining and conserving the mulberry genetic resources. And we have developed several techniques needed for fruit production, such as tree types, pruning methods, disease and pest control methods, and labor saving harvesting methods.

Morning, May 11, 2017 (Thursday)

Time: 10:45~12:15

Venue: NAIK ÉKI meeting room

Session 3: 6 presentations- Topic: “Agriculture and Biotechnology”

Session Chair: Prof. ANDERS PERMIN

S2005 Presentation 4 (11:30~11:45)

Effects of Increasing Doses of Vermicompost Applications on P and K Contents of Pepper (*Capsicum annuum L.*) and Eggplant (*Solanum melongena L.*)

Korkmaz Bellitürk, Sevinç Adiloğlu, Yusuf Solmaz, Ali Zahmacıoğlu and Aydın Adiloğlu

Namık Kemal University, Faculty of Agriculture, Department of Soil Science and Plant Nutrition, Tekirdag/Turkey.

Abstract—In this study, which was carried on in controlled circumstances, the effects of the increasing doses of vermicompost implementation [0 (VC1), 3 (VC2), 5 (VC3), 7(VC4), %] on the P and K contents of pepper (*capsicum annuum L.*) and eggplant (*solanum melongena L.*) have been investigated. When P and K analysis results of pepper and eggplants analyzed were observed, it has been realized that there is a linear increase in both element values with vermicompost applied at increasing rates. While the phosphorus and potassium contents of pepper plant were 0.0162% and 3.0454%, respectively, when the lowest dose (VC1) was considered, 0.0393% and 6.2519% respectively for the highest dose (VC4) application. While the phosphorus and potassium contents of the eggplant plant were 0.0121% and 2.1462%, respectively, when the lowest dose (VC1) was considered, 0.0277% and 3.2843% respectively with the highest dose (VC4) application. As a result of the study, organic worm fertilization practices, which are increasingly called vermicompost, have been shown to increase P and K contents in both pepper and eggplant plants. According to this result, it is possible to say that vermicompost can easily be used easily in P and K fertilization in the cultivation of such vegetables.

Morning, May 11, 2017 (Thursday)

Time: 10:45~12:15

Venue: NAIK ÉKI meeting room

Session 3: 6 presentations- Topic: “Agriculture and Biotechnology”

Session Chair: Prof. ANDERS PERMIN

M0017 Presentation 5 (11:45~12:00)

In vitro Bulblet Production in *Fritillaria cirrhosa* - a Chinese Herb Used for Curing Cough

Chia-Chen Chen, Dinesh Chandra Agrawal, Hsin-Sheng Tsay, Chao-Lin Kuo and **Hung-Chi Chang**

Chaoyang University of Technology, Taiwan

Abstract—*Fritillaria cirrhosa* also known as *Chuanbeimu* in Chinese is an important medicinal herb for cough relief. *F. cirrhosa*, a perennial herb plant is mainly distributed in Sichuan Plateau in China. The overexploration of its bulbs for pharmaceutical use has made the species endangered and is now classified as 3th grade protected species. Conventionally, *F. cirrhosa* is propagated by bulbs, however the low propagation rate (two bulblets per year) is a serious limitation for large-scale cultivation. Low germination rate and restricted growth conditions also pose a severe constraint to field and/or green house production. In our institute, *in vitro* seed germination of *F. cirrhosa* was achieved in MS basal medium supplemented with 6-benzylaminopurine (1 mgL^{-1}) and α -naphthalene-acetic-acid (0.4 mgL^{-1}). Seedlings (54.8%) established *in vitro*. Of these 37.5% seedlings showed bulblet formation, 2.9%, seedlings showed leaf formation and 19.2% seedlings induced callus. Experiments were carried out to multiply these *in vitro* bulblets by making transverse and longitudinal sections and culturing them into 1/2 X MS medium. By repeated subcultures, 192 sections of bulblets could be multiplied to 3072 bulblets in 12 months (5 subcultures at an interval of 2 months). HPLC analysis of *in vitro* bulblets and callus showed presence of active compounds. In this report we present an efficient *in vitro* propagation method of bulblets of *F. cirrhosa*. Under laboratory conditions, these bulblets can be produced throughout the year.

Morning, May 11, 2017 (Thursday)

Time: 10:45~12:15

Venue: NAIK ÉKI meeting room

Session 3: 6 presentations- Topic: “Agriculture and Biotechnology”

Session Chair: Prof. ANDERS PERMIN

M0015 Presentation 6 (12:00~12:15)

Biotechnology as a Tool for Production of Important Drugs

Hsin-Sheng Tsay and Dinesh Chandra Agrawal

Chaoyang University of Technology, Taiwan

Abstract—Plants have been a prime natural source of alternative medicines, all over the world for centuries. The old tradition of medicinal plant application has turned into a highly profitable business in the global market, resulting in the release of a large number of herbal products. Tissue culture plays an important role in the mass propagation of economically important medicinal herbs, and in the production of a number of bioactive compounds. In our Institute in Taiwan, significant progress has been made in the development of tissue culture protocols, and isolation of bioactive compounds of a large number of traditional Chinese medicinal plant species. Technologies for mass propagation of valuable medicinal herbs through shoot morphogenesis, somatic embryogenesis have been developed. In addition, cell suspension cultures of several medicinal herbs have been established. These culture systems have been successfully used to produce pharmaceutically important compounds like imperatorin, corydaline, diosgenin, gentipicroside and swertiamarin anthraquinones, cryptotanshinone, harpagoside and paclitaxel.



Lunch	
12:20-13:30	Restaurant

Session 4

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, May 11, 2017 (Thursday)

Time: 13:30~15:15

Venue: NAIK ÉKI meeting room

Session 4: 7 presentations- Topic: “Food Safety and Nutrition”

Session Chair: Prof. Hami Alpas

S0004 Presentation 1 (13:30~13:45)

GM Food: A Crime against Humanity?

Thomas V. Prevenslik

QED Radiations, Discovery Bay, Hong Kong

Abstract—Modern agriculture controls weeds by spraying Roundup containing water and Glyphosate onto crop fields. To enhance Glyphosate penetration through weed leaves, POEA is usually included in Roundup. POEA stands for polyoxyethyleneamine. But weeds alone cannot be sprayed and the POEA enters the leaves of adjacent corn and soybean crops as an emulsion of NP globules that finally reside in the plant crop. NP stands for nanoparticle. Upon ingestion of GM food, metabolic heat in the gut is generally thought to increase the NP temperature. GM stands for genetically modified. But this finds basis in classical physics when in fact QM governs NPs in particular. QM stands for quantum mechanics and requires the heat capacity of NPs to vanish. Conservation of heat in NPs therefore cannot occur by an increase in temperature and instead proceeds by emission of UV radiation. Nearby DNA are damaged and if the scrambled genes are not repaired by the immune system may lead to birth defects, autism, and cancer. Indeed, the UV radiation from NPs supports experiments over the past decade showing NPs damage DNA. Whether altering the DNA of the people of the world by NPs in GM food is discussed as a crime against humanity.

Afternoon, May 11, 2017 (Thursday)

Time: 13:30~15:15

Venue: NAIK ÉKI meeting room

Session 4: 7 presentations- Topic: “Food Safety and Nutrition”

Session Chair: Prof. Hami Alpas

S0011 Presentation 2 (13:45~14:00)

The effect of chia seeds (*Salvia hispanica* L.) addition on quality and nutritional value of wheat bread

Waleed Hameed Hassoon, Grażyna Cacak-Pietrzak, Małgorzata Sobczyk and **Dariusz Dziki**

Thermal Engineering Department, Faculty of Production Engineering, University of Life Sciences, Doświadczalna Str. 44, 20-280, Lublin, Poland

Abstract—The aim of the study was to analyze and characterize the influence of chia seeds (CS) addition (0, 2, 4 and 6) g/100 g wheat flour on wheat bread properties. Bread properties that underwent evaluation included: chemical composition, fatty acid composition, total phenolics content, volume, baking losses, crumb texture, and color and sensory analysis. The addition of CS decreased baking losses and the volume of bread. The color of the crumb with CS was much darker as compared with the control sample. The texture analysis showed that the CS caused a decrease in the hardness of the crumb. Most importantly, the addition of CS increased the nutritional value of the bread. Bread with CS contained more dietary fiber and mineral components. Moreover, it has been observed that in comparison to the control product bread with CS was characterized by a rich fatty acids composition, higher level of phenolic compounds.

Afternoon, May 11, 2017 (Thursday)

Time: 13:30~15:15

Venue: NAIK ÉKI meeting room

Session 4: 7 presentations- Topic: “Food Safety and Nutrition”

Session Chair: Prof. Hami Alpas

S0013 Presentation 3 (14:00~14:15)

Background monitoring and health risk assessment of non-dioxin like polychlorinated biphenyls in fresh foods

Ching Chang Lee, Chung-Feng Hung, Su-Yao Yang, Ya-Chen Hsu and Yi-Ting Kao

Department of Environmental and Occupational Health, College of Medicine, National Cheng Kung University, Tainan, Taiwan

Abstract—The objectives in present study are to investigate the levels of non-dioxin like polychlorinated biphenyls (NDL-PCBs) in various foods, complete the ingestion risk assessment of NDL-PCB in foodstuffs. Systematic sampling methods were used to collect 200 fresh food samples in eleven categories during February to September in 2015, and the NDL-PCBs was analyzed by HRGC/HRMS. A dietary intake risk assessment of NDL-PCBs was conducted by integrating the data of food consumption and the NDL-PCBs level of foods. The highest 39 NDL-PCBs and six marker PCBs (ICES-6) level was found in fish (2.31 and 1.15 ng/g fresh weight). The NDL-PCBs levels in seafood was significantly higher than the terrestrial animal foods, especially in large predatory fishes. The average daily dose (ADD) was estimated by Monte Carlo Simulation (MCS). The highest 95% upper limit of ADD of ICES-6 from Taiwanese food consumption data bank was found in 3-6 years old (7.21 ng/kg/day), the lowest was found in 16-18 years old female (2.47 ng/kg/day). The highest 95% upper limit of ADDs of ICES-6 in all age groups of this study are lower than the TDI reference value, 10 ng/kg/day. Therefore, the hazard indexes (HI) were all below 1 (0.25~0.72), and still within the acceptable range.

Afternoon, May 11, 2017 (Thursday)

Time: 13:30~15:15

Venue: NAIK ÉKI meeting room

Session 4: 7 presentations- Topic: “Food Safety and Nutrition”

Session Chair: Prof. Hami Alpas

S2003 Presentation 4 (14:15~14:30)

Human health risk assessment for heavy metal uptake via consuming vegetables and fish near industrial areas in Taiwan

Hsiu-Ling Chen and Jai-Pei Tan

Institute of Occupational Safety and Hazard Prevention, Hung Kuang University, Taichung, Taiwan

Abstract—Many heavy industries and science industrial park have been build up in central Taiwan, where is a place of production for agricultures, grains, vegetables. Moreover, there are many illegal industries in Chunghua, Yunlin Counties, such as electroplating industries. Therefore, the local producing food might be polluted by the emission from air, waste water through the cultivated process. This study aims to evaluate heavy metals concentrations (Pb, Cd, Hg, As, Cr, Ni, Cu, and Zn) in farm raised grains or vegetables, wild or cultivated fish in three industrial areas. Long-Jing is near a large fire plant and a steel iron smelter; Chang-Hua is a combined industry area; Ho-Li is near a high technology industry and a steel iron smelter. Meanwhile, the fish was also collected in Taichung port. One hundred and nine vegetables and 25 fish samples were obtained in this study. The levels of Cr, Ni, Zn, and Cu in leaf-vegetables are higher than the creeping and root-stock vegetables, and the metals pattern is not similar in different type industrial areas. The cancer risk of As are over than 0.001 in three industrial areas, HQs of Pb, Cd, Ni, As and Hg are over than 1 in three industrial areas, and the \sum HI is higher in Ho-Li>Long -Jing>Chang-Hua. For wild fish, the higher cancer risk is found in residents consuming more small fish (1.48×10^{-3}) than those eating large fish. All of HQs are almost over than 1 in each age group in Ho-Li, Long-Jing and Chunghua, whereas HQs calculated from Taichung port is less than 1. The data indicated that the wild fish might be contaminated by local industrial emission and the industrial emission might directly to contaminate the local cultivated leaf-vegetables to cause the health risk.

Afternoon, May 11, 2017 (Thursday)

Time: 13:30~15:15

Venue: NAIK ÉKI meeting room

Session 4: 7 presentations- Topic: “Food Safety and Nutrition”

Session Chair: Prof. Hami Alpas

M0028 Presentation 5 (14:30~14:45)

Nutritional and Sensory Quality of Brownies Supplemented with Tapuy (Philippine Rice Wine) Lees

Rosalyn V. Manaois and Amelia V. Morales

Philippine Rice Research Institute, Maligaya, Science City of Muñoz, Nueva Ecija 3119, Philippines

Abstract—Different levels of rice wine lees powder (RLP) were substituted to wheat flour in brownies: 0, 15, 30, 45, and 60% (wt/wt). Increasing the levels of RLP resulted in products with higher moisture content and water activity. RLP-supplemented products (30 and 45%) had significant improvements in crude protein content, without considerable effect on overall sensory quality. There was also a large increase in dietary fiber from 13.85% to 19.50% when 45% RLP was used in brownies. Results demonstrated the feasibility of producing a value-added food ingredient using a major by-product of *tapuy* manufacture.

Afternoon, May 11, 2017 (Thursday)

Time: 13:30~15:15

Venue: NAIK ÉKI meeting room

Session 4: 7 presentations- Topic: “Food Safety and Nutrition”

Session Chair: Prof. Hami Alpas

M0033 Presentation 6 (14:45~15:00)

Correlation of Sweetened-Drink Consumption with Obesity Prevalence in Adolescents in State Secondary School 1 Bandung, Indonesia

Mayesti Akhriani, Eriza Fadhilah and Fuadiyah Nila Kurniasih

Faculty of Medicine, University of Brawijaya, Malang, Indonesia

Abstract—Sugar-sweetened drinks are drinks that are added with sugar during the production process and contribute to energy content but have fewer nutrients. Sugar-sweetened drinks in Indonesia contained 37-54 gram sugar for 300-500 ml serving. This sugar content exceeds four times the recommended added sugar for drinks, that is 6-12 gram and has contributed in 310-420 energy calories. Excessive sugar-sweetened drinks may cause overweight. *Overweight was a condition when energy consumption was exceeding energy expenditure.* Therefore, there will be an excessive fat storage in adipose tissue. The aim of this research was to find the correlation between sugar-sweetened drinks consumption and overweight in adolescents. This research was a cross-sectional study with 100 subjects from second grade and held on November 2014. Subjects were aged from 12 to 14 years and had z-score more than -2 SD. Sugar-sweetened drinks consumption was obtained by the interview with Semi-Quantitative Food Frequency Questionnaires (SQ-FFQ) for a week. Overweight status was measured by using BMI for age z-score. The unvaried statistic result showed that average of sugar-sweetened drinks consumption was 60.43 gram ($\pm 36.31SD$) and it contributed to 19,04% energy from the average subject's energy, 1754.089 calories. Meanwhile, nutritional status average based on z-score was 0.149 ($\pm 1.016SD$), and overweight prevalence was 21%. It was then concluded, based on Pearson's correlation analysis, that there was no relationship between sugar-sweetened drinks consumption and obesity in adolescents ($p > 0,05$).

Afternoon, May 11, 2017 (Thursday)

Time: 13:30~15:15

Venue: NAIK ÉKI meeting room

Session 4: 7 presentations- Topic: “Food Safety and Nutrition”

Session Chair: Prof. Hami Alpas

M0042 Presentation 7 (15:00~15:15)

The Relationship Between Neck Circumference and Obesity in Children and Adolescents

Nurcan YABANCI AYHAN, **Gökçen İPLİKÇİ**, M. Elif ÖZTÜRK, Nida TOKAÇ ER, Hacı Ömer YILMAZ

Department of Nutrition and Dietetics, Faculty of Health Sciences, Ankara University, Ankara, TURKEY

Abstract—Aims: This study was planned to determine the relationship between neck circumference and obesity in children and adolescents. *Method:* The study sample consisted of 868 volunteer children and adolescents, 386 boys and 482 girls aged between 9-17 years. The data were collected by using face to face interviews by way of a questionnaire, then the measurements of body weight, height and neck circumference taken by dietitians. Body mass index (BMI) was calculated and percentile classifications were made according to World Health Organization (WHO) reference values. The statistical analyses were performed with SPSS version 23.0 for Windows. *Results:* The average age of the children and adolescents participating in the study was 14.2 ± 1.9 years. It was found that the 28.9% of students were overweight or obese ($p=0.008$). Girls were significantly more overweight or obese than boys ($p=0.004$). Correlations between neck circumference and BMI percentiles were found to be positively correlated in all age groups included in the study ($r=0.627$, $p= 0.000$). *Conclusions:* Neck circumference may be used for determining obesity in children and adolescents. It is also cost-effective and practical for large populations. More studies are needed in order to measure of neck circumference to be more effective we need to work more on a larger sample of the population.



15:15-15:35

Coffee Break

Session 5

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, May 11, 2017 (Thursday)

Time: 15:35~17:20

Venue: NAIK ÉKI meeting room

Session 5: 7 presentations- Topic: “Food Processing”

Session Chair: Prof. Dragiša Savić

S0014 Presentation 1 (15:35~15:50)

Study on Preparation of Mung Beans and Cowpeas Starch Gel with Pre-gelatinized Starch Powder

Bo-Ram Park, Gui-Jung Han and Ha-Yun Kim

National institute of Agricultural Science, RDA, Korea

Abstract—This study was conducted to investigate the effects of manufacturing condition on quality characteristics of Mung beans starch(MS) gel and Cowpeas starch(CS) gel with pre-gelatinized MS and CS powder, respectively. As pre-gelatinized starch powder and water form starch gel without heating, it can be used as an instant food ingredient. To prepare pre-gelatinized MS and CS powder, Mung beans and Cowpeas starch slurry containing about 30% starch solids were dried by double drum drier for 2rpm at 145°C, 7~8psi and those were grinded and pass through with 50 mesh sieve. In order to find optimum manufacturing condition of Mung beans and Cowpeas starch gel, physicochemical characteristics(texture, color value, cross sectional image of processed gel and sensory properties) of pre-gelatinized MS gel and pre-gelatinized CS gel measured according to the two material mixing ratio. Namely, the experiment group were pre-gelatinized MS powder 10%(w/w) gel(A), pre-gelatinized CS powder 5%(w/w) + PGMS powder 5%(w/w) gel(B) and PGCS powder 10%(w/w) gel(C) when the powder mixed 90%(v/w) water temperature 20°C. As a result, the L and b value of experiment group A significantly higher than B, C(p<0.05). The hardness, gumminess and chewiness of C were 561.25g, 506.59 and 322.31, respectively and the values were significantly lower than A, B(p<0.05). Meanwhile, resilience of A, B, C were 0.55, 0.63, 0.68, respectively. The sensory evaluations score of C was highest in the properties of color, chewiness, overall preference. The results of this study showed that the ratio of 10% pre-gelatinized Cowpeas powder was suitable for making the pre-gelatinized starch gel for instant food ingredient.

Afternoon, May 11, 2017 (Thursday)

Time: 15:35~17:20

Venue: NAIK ÉKI meeting room

Session 5: 7 presentations- Topic: “Food Processing”

Session Chair: Prof. Dragiša Savić

S0015 Presentation 2 (15:50~16:05)

Development of Powder with Increased Rutin Content from Mulberry Leaves and Application of Food Materials

Hyun-bok Kim, Jung Dae Lim, Ae-Jung Kim and Gyoo Byung Sung

National Institute of Agricultural Sciences, Wanju, Korea

Abstract—We studied on improvement method of rutin content using mulberry leaf powder. Mulberry leaves were collected and then hot-air dried and powdered for experiment. As a result, we have developed a pre-treatment method that extracts mulberry leaf powder with water or fermented alcohol with reflux extractor and then increases the rutin content by improving the process. Citric acid (0.1 ~ 1%) and 1000 ml fermented food alcohol (50 ~ 95%) or distilled water (10 ~ 50 times) was extracted with 100 g of mulberry leaf powder using a reflux extraction device (80~90 °C, 1 hour, twice). The extracts were collected, filtered and concentrated. For the recrystallization, the concentrate was dissolved by adding distilled water and allowed to stand at a low temperature. Then, the supernatant was discarded by centrifugation, and only the residue was lyophilized to prepare a final powder. As a result, regardless of the concentration of citric acid added, the content of rutin was higher in 90% alcohol extract. Whereas, in the case of extracting with water, citric acid 0.5% was added to water 25 times as much as the weight of mulberry leaf powder, and 2274.4 (mg / 100g) of rutin content was highest in the case of refluxing twice at 80 °C for 1 hour. The powder with increased rutin content is expected to be applicable to various foods as a food additive. In addition, it can contribute to the improvement of the farm income by promoting consumption of mulberry leaf while satisfying the consumers' desire for functional food intake.

Afternoon, May 11, 2017 (Thursday)

Time: 15:35~17:20

Venue: NAIK ÉKI meeting room

Session 5: 7 presentations- Topic: “Food Processing”

Session Chair: Prof. Dragiša Savić

M0018 Presentation 3 (16:05~16:20)

Antibacterial Properties of Tannic Acid Incorporated Rice Starch-gelatin Film

J. Bakar, R. Ahangari, R. Abdul Rahman and R. Karim

Universiti Putra Malaysia, Serdang, Selangor, Malaysia

Abstract—Many food products either handled chill or frozen are frequently packed in plastic-based materials, although these packaging materials are of environmental concerns due to their non-biodegradable characteristics. However, for a short handling period at chill temperatures, for products such as beef, chicken or fish sausages, safety of consuming the products is the utmost important issue. Hence, these products are formulated with preservatives such as nitrates to prolong their shelf-life. This brings in the concept of employing active packaging material as an additional measure to ensure minimal surface contamination to the packaged foods for better shelf-life. Therefore, the objective of this paper is to determine the antibacterial activity of tannic acid when incorporated in rice starch-gelatin biodegradable/edible film at 0 to 0.6% concentrations. The antibacterial activities of the incorporated film were carried out against *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella typhimurium*, and *Bacillus cereus* for the duration of sixteen days under ambient temperatures (~ 28 °C). Upon storage, the increasing concentration of tannic acid incorporation resulted in a significant ($p < 0.05$) increase in inhibition effect as evidence by the zone of inhibitions obtained. The zones of inhibition were 4.5-7 mm for *Escherichia coli*, 0-7 mm for *Salmonella typhimurium*, 0-6 mm in *Listeria monocytogenes* 0.5-4.5 mm for *Bacillus cereus*. The result also showed that *E. coli* O157:H7 was most sensitive to the presence of tannic acid than *L. monocytogenes*, *S. typhimurium*, and *B. cereus*. Film incorporated with 0.45 and 0.6% tannic acid were the films with the highest antibacterial activities. Higher incorporation with tannic acid is limited by the darkening of the film and stiffer texture. Tannic acid can be a potential antibacterial ingredient in active biodegradable/edible packaging formulation.

Afternoon, May 11, 2017 (Thursday)

Time: 15:35~17:20

Venue: NAIK ÉKI meeting room

Session 5: 7 presentations- Topic: “Food Processing”

Session Chair: Prof. Dragiša Savić

M1002 Presentation 4 (16:20~16:35)

Lactic Acid Bacteria Microbiota of Three Artisan Serbian Fermented Sausages

Bojana Danilović, Bojana Milićević, Natalija Džinić and Dragiša Savić

Department for food technology and biotechnology, University of Nis, Leskovac, Serbia

Abstract—Artisan fermented sausages have specific sensory characteristics which are determined by the geographical origin and the traditional production process. The fermentation process is mostly driven by the activity of lactic acid bacteria (LAB) which are present in the meat matrix. The aroma and the flavor of the final product also depends on the presence of coagulase negative cocci (CNC). Three different traditional fermented sausages made in the Republic of Serbia have been analysed in this paper. The total number of mesophilic bacteria, number of LAB and CNC and the composition of LAB microbiota were determined in Petrovac sausage, Pirotska sausage and Sokobanjska sausage. All sausages were prepared on a traditional way and without the addition of starter cultures. According to the results the highest number of mesophilic bacteria and LAB was observed in the Petrovac sausages, 8 log CFU/g. The number of CNC was the highest in the sokobanjska sausages and it reached the value of almost 5 log CFU/g. Concerning the LAB microbiota composition lactobacilli were dominant in all three analyzed sausages. Besides lactobacilli, the representatives of *Enterococcus* spp., *Pediococcus* spp. and *Leuconostoc* spp. were also isolated but in a lower percentage. The qualitative and quantitative composition of LAB microbiota differs in the samples of Petrovac, Pirotska and Sokobanjska sausages.

Afternoon, May 11, 2017 (Thursday)

Time: 15:35~17:20

Venue: NAIK ÉKI meeting room

Session 5: 7 presentations- Topic: “Food Processing”

Session Chair: Prof. Dragiša Savić

M0038 Presentation 5 (16:35~16:50)

High Hydrostatic Pressure (HHP) Treated Palm Stearin Emulsions: Characterization of Lipid Crystal

Sezen Sevdin, Barış Özel , Mecit Halil Öztop, Hami Alpas

Middle East Technical University, Ankara, Turkey

Abstract—Emulsions are widely used in food industry to maintain certain textural and sensorial product properties. Generally, lipid structures (polymorphs) in the emulsions are the determinant factors for sensorial, textural properties and the stability of the emulsions. Therefore, controlled crystallization gain an importance during the production of margarine, confectionery, chocolate, etc. Lipids in emulsion state have different crystallization and melting characteristics different than their bulk form. This allows not only to produce food products in liquid form with high stability due to solid lipid particles inside the droplets but also the production of various food products. In literature, studies on the effect of high hydrostatic pressure (HHP) on lipid crystallization, have contradictory results. Therefore, palm stearin was selected to inspect its crystallization characteristics and response to the HHP treatment in emulsified form. Palm stearin-water emulsions were prepared with two different emulsifiers (sodium caseinate and hydrogenated soy lecithin-xanthan gum mixture). Treatment conditions were 100 and 500 MPa and at 10, 20 and 40 °C for 15 minutes. Physical stability of emulsions was checked during 28-day storage at refrigeration temperature with determination of particle size of droplets. Also, differential scanning calorimetry (DSC) was used to observe the polymorphs' structures and contents found in samples. Transverse relaxation time and self-diffusion coefficient (SDC) determinations were also conducted to follow the polymorphic changes of lipid crystals by using nuclear magnetic resonance (NMR) technique.

Afternoon, May 11, 2017 (Thursday)

Time: 15:35~17:20

Venue: NAIK ÉKI meeting room

Session 5: 7 presentations- Topic: “Food Processing”

Session Chair: Prof. Dragiša Savić

M3003 Presentation 6 (16:50~17:05)

Utilization of the By-Products of Whey and Cream Obtained during the Production of an Ewes' Milk Cheese

Sebnem Ozturkoglu-Budak, Ceren Akal, Nazli Turkmen

Ankara University, Department of Dairy Technology, Turkey

Abstract—Divle Cave cheese is an artisanal cheese made from raw ewes' milk. The raw milk used for cheese production comprises 9.5% fat in average, while it is standardized to fat content of 4-4.5% to prevent the excessive lipolysis during cheese ripening that takes for 4-5 months in Divle Cave. During cheese production, standardized semi-skimmed milk is coagulated with calf rennet and whey is separated as a by-product after the curd is broken. At a yield of approximately 10% cream and 80% whey is usually acquired at this stage. In the scope of waste and by-product utilization, obtained cream was used as a raw material for the production of ewe's cheese butter. The cream (52% fat) was pasteurized at 80°C for 20 min and cooled to 43-45 °C. Following the addition of starter culture with a ratio of 2% into cream, it was incubated at 43 °C until pH value of 4.5-4.6. Then cream was churned at 8-10 °C for 30 min and the fat granules were separated from the buttermilk after washing. The remaining butter is kneaded to form a network. Whey was also used for the production of whey cheese called as Lor in Turkey. Salt (2%) added whey was pasteurized at 85 °C for 30 min, subsequently the curd was collected and drained for 12 hours. Some properties such as chemical composition (non-fat dry matter, fat, total nitrogen and ash values), physical properties, aroma profile (GC-MS) and sensory properties of both Lor cheese and butter were determined during the 14 days of storage. In conclusion, by-products such as cream and whey obtained during the production of a traditional ewes' milk cheese were evaluated for the suitability to Lor cheese and ewes' milk butter. The specific properties of ewes' milk such as high dry matter, fat and intense flavor which originates from the natural feeding of ewes' at highlands and meadows as well as the natural ecosystem of village contribute the sensory and physical properties of newly developed products.

Afternoon, May 11, 2017 (Thursday)

Time: 15:35~17:20

Venue: NAIK ÉKI meeting room

Session 5: 7 presentations- Topic: “Food Processing”

Session Chair: Prof. Dragiša Savić

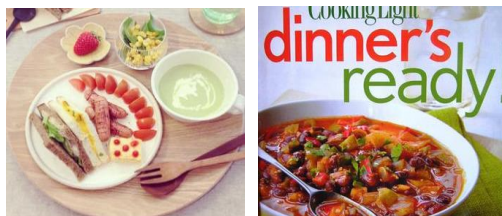
M0046 Presentation 7 (17:05~17:20)

Comparison of Microwave Vacuum-, Freeze- and Hot-Air Drying by Energy Efficiency and Aroma Composition of Dried Hop (*Humulus lupulus*)

Sándor Ferenczi, Helga Molnár, Nóra Adányi and Zsuzsanna Cserhalmi

NARIC Food Science Research Institute, Budapest, Hungary

Abstract—In this study, 3 different drying methods (hot-air drying, freeze drying, microwave vacuum drying) were compared by aroma composition of dried hops and the required electrical energy for each technology. From the total volatile fraction, 3 main compounds were detected: β -myrcene, α -caryophyllene and β -caryophyllene. According to the results, the 3 drying technologies did not cause significant change in aroma compound composition in dried hop. β -myrcene was preserved in the largest amount by freeze drying, followed by microwave vacuum drying and hot-air drying, respectively. Freeze drying had by far the highest energy consumption, followed by microwave vacuum drying. Hot-air drying used the less energy, which is 5.96% of freeze drying. Microwave vacuum drying could be a promising alternative to widely used hot-air drying for hop, because of better aroma retention and slightly higher required electric energy.



Dinner	
18:00	Restaurant

Poster Session

May 10, 2017 (Wednesday) & May 11, 2017 (Thursday)

Time: 13:00~18:05(May 10) & 8:50~17:20(May 11)

Venue: NAIK ÉKI meeting room

Poster session: 3 presentations

S0002 Poster 1

Texture Analysis of Freeze Dried Banana Applying Scanning Electron Microscopy Combined with Image Analysis Techniques

Facundo Pieniazek and **Valeria Messina**

CITEDEF, Argentina

Abstract—The aim of the present research was to evaluate the impact of freeze drying on texture properties of banana cv Cavendish. Freeze drying was performed at different rates ($T_1= 7h (-40\text{ }^\circ\text{C})/24h (40\text{ }^\circ\text{C})$; $T_2= 7h (-40\text{ }^\circ\text{C})/48h (40\text{ }^\circ\text{C})$; $T_3= 18h (-40\text{ }^\circ\text{C})/24h (40\text{ }^\circ\text{C})$ and $T_4 = 18h (-40\text{ }^\circ\text{C})/48h (40\text{ }^\circ\text{C})$). Microstructure was analyzed using a Scanning Electron Microscopy (SEM); Surface texture analysis by Grey Level Co Matrix Analysis (GLCM) and water absorbing capability and porosity by conventional techniques. Micrographs performed at 250 and 500 times magnification revealed that T_1 and T_2 showed higher porous size structure with larger and irregular cavities, and higher rehydration process was observed in T_1 and T_2 when it was related to T_3 and T_4 . A higher rehydration process is due to a porous network with permeable barriers. Significant difference ($P<0.05$) were obtained for texture parameters, water absorbing capability and porosity. Hardness and roughness decreased in T_3 and T_4 . These results suggest that prediction of texture parameters in banana cv. Cavendish can be performed easily by processing the surface and cross section images with SEM and GLCM methods.

May 10, 2017 (Wednesday) & May 11, 2017 (Thursday)

Time: 13:00~18:05(May 10) & 8:50~17:20(May 11)

Venue: NAIK ÉKI meeting room

Poster session: 3 presentations

S0006 Poster 2

Storage Life of 'Fuji' Apple Stored in the Controlled Atmosphere Container

Seokho Park, Cheonwan Park, Jongwoo Park, Dongsoo Choi, Jinse Kim and Yonghun Kim

Department of Agricultural Engineering, National Institute of Agricultural Sciences, RDA, Korea

Abstract—This study was carried out to indirectly predict the storage life, hardness, and acidity through respiration rate of Fuji apples in controlled atmosphere (CA) storage. A sensor installed inside the CA storage measured temperature, relative humidity, and gas composition data in real time. The respiration rate from five tons of apples in CA storage was calculated to predict the weight loss rate. As a result, the predicted and actual weight loss rate induced a predictable residual storage time equation that showed a very high correlation. The apple storage period showed a high reliability ($R^2=0.9322$) because the predicted equation using respiration rate and number of days stored was about nine months for five tons of apples. The hardness and acidity prediction equations were derive from the quality analysis. However, correlation coefficient of hardness and acidity was low as 0.3506 and 0.3144, respectively. It was caused by insufficient quantity of analytical samples, but the decrease tendency of acidity and hardness was confirmed from the equation. As a result, these quality prediction equations could encourage CA container distribution, effective for agricultural shipment regulation and increasing ease of operations.

May 10, 2017 (Wednesday) & May 11, 2017 (Thursday)

Time: 13:00~18:05(May 10) & 8:50~17:20(May 11)

Venue: NAIK ÉKI meeting room

Poster session: 3 presentations

S0010 Poster 3

Prediction Method of Weight Loss through Measurement of Controlled Atmosphere (CA) Storage Environment

ChunWan Park, Seokho Park, Jongwoo Park, Dongsoo Choi, Jinse Kim and Yong Hun Kimu

Center for Agriculture Resources Research, Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, China

Abstract—Weight loss that influences the quality and farmer incomes is affected by storage environment of agricultural products. The interior of storage should be maintained at high humidity to prevent weight loss of products which contains a lot of moisture. The research had constantly proceeded with change of the heat exchanger surface areas, humidity systems to maintain high humidity within storage. And weight loss prediction carry out by vapor pressure deficit (VPD) and K-value. Relative humidity that exerts an effect weight loss of crop be influenced by storage temperature, leak state and volume of product. When weight loss predicts, different conditions of these factors derive the error. In case of CA storage, ways of forecasting the weight loss become easier than cold storage due to sealed storage with external environment during storage period. In this study, Apples were stored in purge-type CA storage and weight loss has been predicted by using operating characteristics of refrigerator system and environmental conditions. And it was compared with actual weight loss. As a result, humidity variation in the storage fluctuates with operation of unit-cooler. Furthermore unit-cooler operation factor is influenced by outside temperature and respiration heat. Prediction value of weight loss according to temperature and humidity has been most accurately predicted. Prediction value through measured defrosting water shows unit-cooler work quality. K-value needs verification to calculate of VPD method.

One Day Visit & Tour

May 12, 2017 (Friday) 9:00~17:00

(Tip: Please arrive at NAIK ÉKI meeting room, NARIC Food Science Research Institute --the place for registration before 9 a.m. The following places are for references, and the final schedule should be adjusted to the actual notice.)

1. (9:00) Assemble at NAIK ÉKI meeting room, NARIC Food Science Research Institute

2. (9:00-12:00) NARIC Food Science Research Institute



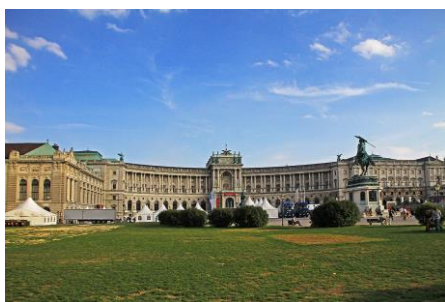
NARIC Food Science Research Institute, Budapest

The National Agricultural and Research and Innovation Center, NARIC (in Hungarian: Nemzeti Agrárkutatási és Innovációs Központ, NAIK) was established on 1st of January 2014. NARIC FSRI constitutes a bridge between food manufacturers and the consumers by the implementation of well-tailored and extensive basic and

applied researches on biology, chemistry, physics and technology. NARIC Food Science Research Institute (FSRI) satisfies the consumers' demands of the modern society as provides scientific results on food safety and food origin, as well as takes part in development of new, healthy foodstuffs and novel special technologies. Monitoring of food safety and composition is assisted by state-of-art developed (bio)analytical methods and devices.

3. (12:00-13:30) Lunch time (At your own expense)

4. (13:30-17:00) Visit Budapest



Szentendre-Visegrád

Szentendre is a riverside town in Pest county, Hungary, near the capital city Budapest. Due to its historic architecture (from 12th century) and river access, it has become a popular destination for tourists staying in Budapest. It is known for its museums (most notably the Open-Air Ethnographic Museum), galleries, and artists. Due to its historic architecture and easy rail and river access, it has become a popular destination for tourists staying in Budapest. There

are many facilities, including souvenir shops and restaurants, catering to these visitors.

5. (17:00) Back to NARIC Food Science Research Institute.

Conference Venue

NARIC Food Science Research Institute, Budapest

<http://eki.naik.hu/index.php/en/>



The conference will be held at NARIC Food Science Research Institute, Budapest. The National Agricultural and Research and Innovation Center, NARIC (in Hungarian: Nemzeti Agrárkutatói és Innovációs Központ, NAIK) was established on 1st of January 2014.

One of its institutes is the Food Science Research Institute, FSRI (in Hungarian: Élelmiszer-tudományi Kutatóintézet (ÉKI)). This institute operates in the earlier KÉKI buildings. Dr. Attila KISS has been nominated as its acting director in March 2014.

NARIC FSRI constitutes a bridge between food manufacturers and the consumers by the implementation of well-tailored and extensive basic and applied researches on biology, chemistry, physics and technology. NARIC Food Science Research Institute (FSRI) satisfies the consumers' demands of the modern society as provides scientific results on food safety and food origin, as well as takes part in development of new, healthy foodstuffs and novel special technologies. Monitoring of food safety and composition is assisted by state-of-art developed (bio)analytical methods and devices.

Major tasks of the institute are also assessment and classification of food raw materials and food products, development of novel, considerate technologies and preservation methods. Our aim is to strengthen food safety procedures with new methods, setting up complex data bases and revealing contamination. In the food chain not only the quality assurance is important but the risk management, the risk communication and the relevant consumers' information to protect their health are also essential.

- **Date:** 10-11 May 2017
- **Place:** NAIK ÉKI meeting room
- NARIC Food Science Research Institute, Budapest



Feedback Information

(Please fill this form and return it to conference specialist during the conference days.)

Personal Information					
Conference Name and Paper ID					
Full Name					
E-mail Address					
Area of Research					
Affiliation					
Please indicate your overall satisfaction with this conference with “√”					
	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied
Conference Content					
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Registration Process					
Venue					
Food and Beverage					
Are You A Member of APCBEES	Yes <input type="checkbox"/> No <input type="checkbox"/> (If “No”, you may apply membership from http://www.cbees.org/member.htm)				
Do You Willing to Receive APCBEES Future Conferences Information Via E-mail	Yes <input type="checkbox"/> No <input type="checkbox"/>				
Where did you get the conference information?					
Would you please specify the main reason for attending this conference?					
Did the conference fulfill your reason for attending?	Yes– Absolutely <input type="checkbox"/> Yes- But not to my full extent <input type="checkbox"/> No <input type="checkbox"/> (If “No”, please tell us the main reason)				

2017 BUDAPEST CONFERENCE

<p>Would you please list the top 3 to 5 universities in your city?</p>	
<p>Other Field of Interest</p>	
<p>Any Other Suggestions/Comments</p>	

Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs!