2018 7th International Conference on Nutrition and Food Sciences (ICNFS 2018)

May 13-15, 2018

The Instituto Superior de Agronomia, Lisbon, Portugal

Tapada da Ajuda1349-017 Lisboa, Portugal

Sponsored and Published by

indexed by

www.cbees.org

Conference Venue

The Instituto Superior de Agronomia

Add: Tapada da Ajuda, 1349-017 Lisboa, Portugal

http://www.isa.ulisboa.pt/en

The Instituto Superior de Agronomia (ISA), School of Agriculture, is the largest and most qualified school of graduate and post-graduate degrees in the Agricultural Sciences, in Portugal, and its know-how is recognized nationally and internationally. With over 160 years of experience, it has been adjusting its teaching to both the technological evolution and the reality of the country, focusing both on quality and modernization. ISA was integrated in the Technical University of Lisbon in 1930. Since 2013 it became part of the University of Lisbon, resulting from the merger of the Technical University of Lisbon and the former University of Lisbon. It has about 1700 students in graduate and undergraduate programmes, a faculty of 127 teachers and 44 Researchers, including 161 PhDs. Located in the heart of Lisbon, Tapada da Ajuda – an Environmental and Botanical Park with about 100 ha, of recognized interest – it is also a pleasant place for events, recreational activities and the discovery of sites, such as the interesting Amphitheatre of Stone, the Belvedere, the Garden of the Parada, the Rugby field, the Astronomical Observatory, the Exhibition Pavilion, the Auditorium of Lagoa Branca, among others.

Table of Contents

Session 1

Session 2

Posters

Lisbon Conference Introductions

Welcome to 2018 HKCBEES Lisbon conference. This conference is organized by HKCBEES. The objective of the Singapore 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 Food and Agricultural Engineering; Nutrition and Food Sciences.

2018 7th International Conference on Nutrition and Food Sciences (ICNFS 2018)

Papers will be published in one of the following journal or proceeding:

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

International Proceedings of Chemical, Biological and Environmental Engineering (IPCBEE, 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

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 **40** 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 Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on May 14, 2018.

Dress code

Please wear formal clothes or national representative of clothing.

Keynote Speaker Introductions

Keynote 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 290 research papers in scientific journals and books, and given 130 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: “Phytophenolics: an ancient family of antioxidants now applied in the food industry for product quality and safety assurance”

Prof. Youling L. Xiong
University of Kentucky, USA

Abstract—Culinary spices have been used in food preparation since antiquity. Today, a wide variety of phenolic-rich plant seeds and herbs as well as their extracts are popular ingredients in culinary foods. In the food industry, these plant-derived materials are incorporated into meat processing to produce complex and delicate flavors, as in the case of coarsely ground sausage, finely comminuted frankfurters, and various marinated meats. Rosemary, black pepper, oreganol, tea extracts, and fennel are samples of polyphenol-rich food ingredients. Recent scientific research has demonstrated that, in addition to their flavor-modifying role, these food ingredients possess strong radical-scavenging activity, therefore, have found new uses as natural antioxidants. Whole herbs and spices, their extracts, and the individual phenolic compounds have been tested for the efficacy to modulate radical formation and block chain reactions in the oxidative degradation of unsaturated lipids and proteins in meat. For example, radical-initiated modification of amino acid side chains in myosin (the main protein constituent in muscle), including the formation carbonyls and disulfide bonds in ground meat and fine meat emulsions, is inhibited by low concentrations of phenolic acids (gallic, chlorogenic, etc.) as well as flavonoids (e.g., EGCG). The ability of phenolic compounds to inhibit toxicant formation (e.g., heterocyclic aromatic amines) has also been demonstrated. Plant polyphenolics contribute to the overall quality and safety of food products through the promotion of oxidative stability of lipids and proteins and disruption of chemical pathways in the toxicant formation. The multi-facet roles of phytopolyphenols have made it possible for them to be utilized as attractive natural food additives in the manufacturing of healthy food products.

Coffee Break & Group Photo Taking	**10:15~10:35**

Keynote Speaker II

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 theFaculty 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 Habilitationat the Food Industry Department in Polytechnic Institute of Viseu – IPV (Portugal). She as been President of the Scientific Board; President of the Assemblyof 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 SciencePublishers, 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).Herresearch interests include areas such as food engineering, food processing,food properties, food chemistry and nutrition.Prof. Guiné is a member of the Portuguese ChemicalSociety (SPQ) and Asia-Pacific Chemical, Biological & EnvironmentalEngineering Society (CBEES). Awards: 2011 – Research Project distinguished(Project lead by her); 2011 – Certificate of Excellence of paper published inFood and BioproductsProcessing in 2010; 2013 – First Prize in the National Contest sponsored by theCAP relative to a new food developed; 2015 – Certificate of Excelence for oralcomunication presented at 2nd International Conference on Food and NutritionTechnology (ICFNT 2015), Jeju Island, Republic of Korea; 2015 – Best ScientificPaper CI&DETS Published in 2014, in the Research Group in Food, Agrarianand Veterinary Sciences; 2016 – Certificate of Best Oral Presentation for communicationpresented

at the 2nd International Conference on Food and AgriculturalEngineering (ICFAE 2016), Copenhagen, Denmark; 2016 – Third Prize in the Regional Contest Poliempreende relative to a new entrepreneurship idea. (URL:www.raquelguine.pt)

Topic: "The Use of Artificial Neural Networks (ANN) in Food Process Engineering?"

Prof. Raquel P. F. Guiné
CI&DETS/ESAV, Polytechnic Institute of Viseu/Department of Food Industry, Viseu, Portugal

Abstract—Artificial neural networks (ANN) aim to solve problems of artificial intelligence, by building a system with links that simulate the human brain. This approach includes the learning process by trial and error. The ANN is a system of neurons connected by synaptic connections and divided into incoming neurons, which receive stimulus from the external environment, internal or hidden neurons and output neurons, that communicate with the outside of the system. The ANNs present many advantages, such as good adaptability characteristics, possibility of generalization and high noise tolerance, among others. Neural networks have been successfully used in various areas, for example, business, finance, medicine, and industry, mainly in problems of classification, prediction, pattern recognition and control. In the food industry, food processing, food engineering, food properties or quality control, statistical tools are frequently present, and ANNs can process more efficiently data comprising multiple input and output variables. The objective of this review was to highlight the application of ANN to food processing, and evaluate its range of use and adaptability to different food systems. For that a systematic review was undertaken from the scientific literature and the selection of the information was based on inclusion criteria defined. The results indicated that ANN is widely used for modelling and prediction in food systems, showing good accuracy and applicability to a wide range of situations and processes in food engineering.

Keynote Speaker III

Prof. Hami Alpas

Middle East Technical University, Metu_ Food Eng. Dept, 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 4 Ph.D and 11 M.Sc. thesis in Food Engineering Department. He has 72 international journal articles (SCI) and over 800 citations (ISI-Web of Sci; h-factor 18) as well as close to 55 academic presentations in 35 different international meetings. He has completed 15 national, 4 international projects including EU/JRC, CNRS-EGIDE and NATO ARW/ATC projects. He has authored 7 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: “Investigation of Physical and Functional Properties of Insect Protein Extracts and Their Glycated Forms”

Hami Alpas, Mecit Halil Oztop, Berkay Bolat, Ahmet Erdem Uğur
Department of Food Engineering, Middle East Technical University, 06800, Ankara, Turkey

Abstract—Edible insects have become one of the most attractive food sources in recent times all over the world especially in Europe as a potential nutrient supply for the near future. Scientists have focused on the edible insects and their related studies since their CO_2 and greenhouse gas emissions are lower than cattle; they require less nutrients and water; their storage is easy and secure on a large scale and they have an eco-friendly lifestyle. This study aims at investigating the physical and functional characterization of the protein extracts of two edible insect species with high protein and nutritional value; *Acheta domesticus* and *Tenebrio molitor*. The insect species include 36 and 60% crude protein in granulated form respectively. In this study, emulsion properties (stability and capacity), fat and water holding capacity of the proteins were analyzed. Glycating protein with sugars is known to improve the physical properties of proteins. Glycation is basically the first step of Maillard reaction where the carbonyl group of a reducing sugar forms a glycosyl-amine with a protein. In this study, simultaneous glycation of monosaccharides (glucose and fructose) with the proteins extracted from these insect species were performed using high hydrostatic pressure (HHP). Glycation was also performed conventionally just by using incubator at 50 ^{o}C. HHP was performed at 2 different pressure and temperature levels. Following HHP treatment, proteins were incubated at 50^{o}C for 6, 12 and 24 hrs. Solubility, foaming, emulsifying ability of the glycated proteins were examined. Hydration and gelling behavior were explored through NMR Relaxometry experiments (T_2 relaxation times). This study concerns not only today, any specific country or region in the world, but also aims to provide a comprehensive solution for more nutritious food due to possible shortage of food source and raw material.


Lunch	**12:05~13:00**

Brief Schedule for Conference

Day 1	**May 13, 2018 (Sunday)** 14:00~17:00 **Venue: Amazonia Lisboa Hotel (Lobby)** (Add：Travessa Fábrica dos Pentes 12-20, Lisbon) Participants Onsite Registration & Conference Materials Collection
Day 2	**May 14, 2018 (Monday)** 9:20~18:30 Registration, Keynote Speech
	Morning Conference **Venue: room 39** **（main building in The Instituto Superior de Agronomia）**
	Opening Remarks 9:20~9:30 Prof. Margarida Moldao The Instituto Superior de Agronomia, Portugal **Keynote Speech I** 9:30~10:15 **Topic: "Phytophenolics: an ancient family of antioxidants now applied in the food industry for product quality and safety assurance"** (Prof. Youling L. Xiong, University of Kentucky, USA)
	Coffee Break & Group Photo Taking 10:15~10:35
	Keynote Speech II 10:35~11:20 **Topic: "The Use of Artificial Neural Networks (ANN) in Food Process Engineering"** (Prof. Raquel de Pinho Ferreira Guiné, Polytechnic Institute of Viseu, Portugal) **Keynote Speech III** 11:20~12:05 **Topic: "Investigation of Physical and Functional Properties of Insect Protein Extracts and Their Glycated Forms"** (Prof. Hami Alpas., Middle East Technical University, Metu_ Food Eng. Dept, Ankara, Turkey)
	Lunch 12:05~13:00 **Venue: The Instituto Superior de Agronomia**
	Afternoon Conference **Venue: room 39** **（main building in The Instituto Superior de Agronomia）**
	Session 1:13:00~15:00 **Venue: room 39** 8 presentations-Topic: "Food Processing and Food Chemistry" Session Chair：Prof. Concha Collar
	Coffee Break 15:00~15:15

	Session 2:15:15~17:30 **Venue: room 39** 9 presentations-Topic: "Food Science and Botany" Session Chair：Prof. Raquel de Pinho Ferreira Guin é
	Visit ISA 17:30~18:30
	Dinner 18:30 **Venue: Estufa Real** （Add: JARDIM BOTÂNICO DA AJUDA CALÇADA DO GALVÃO - 1400-171 LIS）
Day 3	**May 15, 2018 (Tuesday) 8:45~17:00** **One Day City Tour**

Tips: Please arrive at the conference to upload or copy PPT into the laptop room 10 minutes before the session begins.

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 Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on May 14, 2018.

Session 1

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, May14, 2018 (Monday)

Time: 13:00~15:00

Venue: room 39

8presentations- Topic: "Food Processing and Food Chemistry"

Session Chair: Prof. Concha Collar

E0001 Presentation 1 (13:00~13:15)

Millet-wheat mixed breads: impact of sour dough addition on the enhancement of the physical profile of Heat-Moisture Treated matrices

Concha Collar and Enrique Armero

IATA-CSIC. Food Science Department, Paterna, Spain

Abstract—Impact of commercial dried sour doughs (SD) addition to blended wheat: millet (WT:MI, 60:40, wt:wt) flour matrices previously submitted to heat moisture treatment (HMT) of MI, has been investigated on the doughmaking and breadmaking performances of diluted systems. Soured HMT dough and bread mixed matrices when compared to unsoured HMT counterparts explicited a variable physico-chemical profile, associated to the type and dosage of SD added. Improving effects of SD addition were particularly evident for SDs mixed with wheat/rye milling products in their commercial preparation, giving total titratable acidity (TTA) values (mL NaOH 0.1N/5 g fresh sample) <2.86 in doughs, and providing breads with TTA levels <3.10. Those SDs provided enhancement of dough machinability, delayed gelatinization temperatures and lower transition enthalpies, bigger developed bread volume, improved textural behaviour and finer and homogeneous crumb grain in started HMT blended matrices.

Session 1

Afternoon, May14, 2018 (Monday)

Time: 13:00~15:00

Venue: room 39

8presentations- Topic: “Food Processing and Food Chemistry”

Session Chair: Prof. Concha Collar

E2001 Presentation 2 (13:15~13:30)

Physical properties of frozen ewe’s cheese

Paula M. R. Correia, Melania Correia Rodrigues, Rita Mendes and Raquel P. F. Guin é

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

Abstract—This work evaluates the effect of freezing and storage time in ewe ś cheese. Ewe ś cheeses were subject to two different conservation conditions: frozen at -60 °C, with storage at -18 °C (Frozen), and refrigeration at 7 °C, with a RH (relative humidity) of 47% (Control). The initial values of moisture and water activity (aw) were high and similar between the analysed samples, 62.2-61.3 % and 0.91-0.92 respectively, with a decrease of moisture during the storage, being lower in the Frozen sample. The cheeses presented a light colour (L* = 69.0 and 74.6), which decreased during storage. The a* and b* coordinates showed negative and positive values, respectively, meaning that the predominant colours were green and yellow, and generally during storage they diminished. The texture of cheeses, in the first day of storage, presented similar values for Control and Frozen cheeses: 9.8 and 9.9 N for crust firmness; 3.6 and 3.9 N for flesh firmness; -2.6 and -2.8 N for stickiness; -22.7 and 24.7 N.sec for adhesiveness. Finally, after 120 days of storage for these cheeses, the crust firmness, the stickiness and the adhesiveness decreased more about three times.

Session 1

Afternoon, May14, 2018 (Monday)

Time: 13:00~15:00

Venue: room 39

8presentations- Topic: "Food Processing and Food Chemistry"

Session Chair: Prof. Concha Collar

S0017 A Presentation 3 (13:30~13:45)

Effect of High Hydrostatic Pressure (HHP) in Physicochemical Properties of Starch by Nuclear Magnetic Resonance (NMR) Relaxometry

İlhami Okur, Mecit Halil Öztop and **Hami Alpas**

Middle East Technical University, Ankara, Turkey

Abstract—Starch is the major polysaccharides consumed by human being. It is not classified as a dietary fiber as it is digestible by the enzymes present in the saliva and small intestines. However, with thermal and non-thermal techniques it could become possible to modify the starch. High Hydrostatic Pressure (HHP) is a cold pasteurization technique that has increased application in food industry with minimum effect on the nutritional quality of the product. It is hypothesized that the use of HHP could be a modification strategy for starch. The effects of different HHP parameters (400, 500 and 600 MPa pressure) at 20°C and 40°C for 5, 15 and 30 min on in vitro digestibility, physicochemical properties of corn starch were studied. The results showed that HHP treatment increased SDS (Slowly Digestible Starch) and RDS (Rapid Digestible Starch). In addition to this, it was shown that HHP treatment decreased the solubility and swelling power of the corn starch and T_2 relaxation times decreased with HHP treatment as measured by NMR (Nuclear Magnetic Resonance) Relaxometry.

Session 1

Afternoon, May14, 2018 (Monday)

Time: 13:00~15:00

Venue: room 39

8presentations- Topic: "Food Processing and Food Chemistry"

Session Chair: Prof. Concha Collar

S3004 A Presentation 4 (13:45~14:00)

Production and characterization of Quark cheese made from kefir, buttermilk, and cultured skim-milk

Sebnem Ozturkoglu-Budak, **Nazli Turkmen**, Ceren Akal
Ankara University, Department of Dairy Technology, Turkey

Abstract—Quark cheese is categorised under acid or acid/rennet-curd fresh cheeses. It is a soft cheese with a clean, mildly acidic flavor, produced by the addition of a starter culture and a little amount of rennet into pasteurised milk. In this study, previously obtained kefir, buttermilk and whey were individually used for the productions of Quark cheeses as alternatives to skim milk+mesophilic starter culture, which is commonly used as a raw material to produce Quark cheese. Cultured skim-milk was evaluated as control sample during the Quark cheese productions. Two different temperature-time norms were applied on each raw material during the productions. Samples were kept under 35℃ and 100℃, for 16 h and 2 h, respectively for coagulum formation and each of them were rapidly cooled to 4℃ before removal of serum. Coagulation was obtained for the Quark cheeses made from buttermilk, kefir and cultured skim-milk, while no coagulation observed for the Quark cheese made from whey. Three types of products yielded from above mentioned processes were subjected to filtration until the water droplets formed at the bottom of fine-pored clothes.

Some chemical properties, volatile and peptide profiles, microbiological and sensorial analyses were performed in all samples. According to the results of sensory analysis, samples produced at 35℃ had higher results in terms of appearance properties. Samples produced at 100℃ were given higher scores in terms of taste and odour properties and were reported to be more rough by panelists. In addition, a slight bitter taste was detected in the Quark cheeses produced from kefir, and in the HPLC analysis of the same samples, more peaks in the hydrophobic region were detected in direct proportion to the result. Therefore, it is possible to say that the kefir yeasts lead to a bitterness in the Quark cheese produced from kefir. According to the results of total bacteria, lactic acid bacteria and yeast-mold counts, the samples gave similar results while Quark cheese produced at 30℃ from buttermilk was found to give the highest results. The volatile flavor compounds mainly differentiated the Quark cheeses made from kefir, buttermilk or skim-milk treated at different temperatures. As a result, it has been found that it is possible to use kefir and buttermilk as alternative raw materials in the production of Quark cheese.

Session 1

Afternoon, May14, 2018 (Monday)

Time: 13:00~15:00

Venue: room 39

8presentations- Topic: "Food Processing and Food Chemistry"

Session Chair: Prof. Concha Collar

S4001 A Presentation 5 (14:00~14:15)

The Characteristics of Divle Cave Cheese, a PDO Product in Turkey
Sebnem Ozturkoglu-Budak, **Ceren Akal**, Nazli Turkmen
Ankara University, Department of Dairy Technology, Turkey

Abstract—Divle Cave cheese is a traditional PDO (Protected Designation of Origin) product produced from raw ewe's milk. This kind of cheese can also be called Tulum or Goat-skin bag cheese. It is produced in spring when milk is abundant, in Karaman, a rural region of Turkey. During the production, semi-skimmed ewe's milk is coagulated with rennet enzyme after milking. Cheese clot is cut and kept for a while for whey seperation. For the complete removal of whey, curd is filled into cotton bags and pressed under weight for 24 hours. Obtained cheese blocks are kept in water on the next day and following this stage they are crumbled, dry salted and stuffed into goatskin bags. These goatskin bags are pierced randomly at some points and kept in a cool place for 5-10 days to remove the excess moisture. At the end, goatskin bags are left to ripen in Divle Cave for 4 months, where the temperature is 6-8 ℃ and the humidity is 85-90%.

Divle Cave cheese is produced without using any starter culture or fungal spores. During the ripening period in cave, cheese acquires the characteristic taste, flavor and texture. Natural enzymes and useful bacteria such as non-starter lactic acid bacteria (NSLAB) from non-pasteurized milk, and the other microorganisms including filamentous fungi, yeast, coryneform bacteria that are adapted from cave and cheese production environment play an important role for the formation of biochemical changes during ripening. At the same time, the characteristic properties of this traditional cheese are affected by the physical properties of the natural cave and by ecological factors such as pasture flora.

In this study, some properties of cheese samples obtained at the end of ripening stage were examined. For this purpose, chemical properties such as pH value, titratable acidity (lactic acid, %), total dry matter (%), fat content (%), microbiological, textural properties and volatile flavor compounds of cheeses were determined. The pH value of the Divle Cave cheese was found as 5.045, the titratable acidity was 110.2 °SH, the fat content was 15%, the total dry matter content was 51.77% and the hardness value was obtained as 2428.92 g, in average. The counts of total aerobic bacteria, yeast and mould, *Lactobacillus* spp., and *Lactococcus* spp. were obtained as 8.29, 8.32, 7.89, 7.26 log cfu/g, respectively. 2-butanone, 2-butanol and ethyl butanoate are determined as the key flavor compounds, that are specific on sensory properties of Divle Cave cheese.

Session 1

Afternoon, May14, 2018 (Monday)

Time: 13:00~15:00

Venue: room 39

8presentations- Topic: "Food Processing and Food Chemistry"

Session Chair: Prof. Concha Collar

S0014 A Presentation 6 (14:15~14:30)

γ-Aminobutyric Acid Separated from Scallop Solution Fermented by *Enterococcus avium* 9184 Ameliorates Fluoride-Induced Toxicity

Haoyue Yang, Ronge Xing and Pengcheng Li

Institute of Oceanology, Chinese Academy of Sciences, Qingdao, China

Abstract—γ-aminobutyric acid (GABA), as a functional food factor, has various biological properties such as anti-anxiety, antihypertension, and growth-promoting effects. The development and application of GABA have gained popularity in recent times. In this study, a new bacterial strain having a high ability to produce γ-aminobutyric acid (GABA) was isolated from naturally fermented scallop solution and was identified as *Enterococcus avium*. The strain was then mutagenized with ultraviolet radiation and was designated as *E. avium* 9184. Scallop solution was used as the culture medium to produce GABA. A two-stage fermentation strategy was applied to accumulate GABA. Fluorine poisoning affects human health all over the world and alleviative medicine is urgently needed to recover or ameliorate the damages to the body. Here we studied the effects of GABA on fluoride-induced toxicity in mice. we found that GABA supplementation prevented the metabolic toxicity caused by fluoride treatment in mice. This detoxification includes the reduced oxidative stress and apoptosis, enhanced neuron protection and tissue function. This study reduced the production cost of GABA, promoted the production safety of GABA, developed a new way to improve the utilization value of aquatic products, and provided evidence of the beneficial effects of GABA supplement on fluoride-induced toxicity, implicating the therapeutic potential of this amino acid in fluorosis.

Session 1

Afternoon, May14, 2018 (Monday)

Time: 13:00~15:00

Venue: room 39

8presentations- Topic: "Food Processing and Food Chemistry"

Session Chair: Prof. Concha Collar

S0020 A Presentation 7 (14:30~14:45)

Sterol Contents in Spanish Human Milks

I. J. A. Hamdan, E. Matencio, L.M. Sanchez-Siles, G. Garcia-Llatas and M. J. Lagarda

Faculty of Pharmacy, University of Valencia, Spain

Abstract—Human milk (HM) composition is variable and dynamic, especially its lipid compounds (such sterols) depending on the stage of lactation and geographical location, among other factors.
Aim: to evaluate the evolution of sterols during lactation (from colostrum to 6 months) of Spanish human milk from central and coastal geographic zone.
The samples (0.5 ml) were submitted to direct hot saponification, unsaponifiable fraction extraction with n-hexane and re-dissolution with n-hexane for GC-FID analysis.
The main sterols in HM were: cholesterol and desmosterol (ranging between 10.0-21.0 and 0.3-2.0 mg/100 mL, respectively), followed by lathosterol and lanosterol, campesterol, β-sitosterol and stigmasterol (ranging between 24-66, 28-64, 19-34, 13-27 and 5-9 μg/100 mL, respectively). Statistical significance differences ($p < 0.05$) in sterol contents at different stages of lactation were observed. In general, as lactation stages increased, cholesterol, desmosterol and total sterols decreased; lathosterol and lanosterol increased, whereas campesterol, stigmasterol and β-sitosterol showed no changes.
These variations in sterol profile are of interest to be taken into account for the design of infant formulas mimicking HM composition.

Session 1

Afternoon, May14, 2018 (Monday)

Time: 13:00~15:00

Venue: room 39

8presentations- Topic: "Food Processing and Food Chemistry"

Session Chair: Prof. Concha Collar

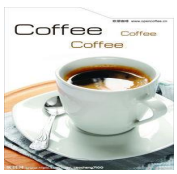
S0022 A Presentation 8 (14:45~15:00)

Analysis of antimony in foods contained in PET containers consumed in Korea

Kyungsu Park, Eunmi Choi, Sunghwa Choi, Minyoung Lee, Yuri Lee, Eunji Kim

Advanced Analysis Center, Korea Institute of Science and Technology, Seoul, Korea

Abstract—The purpose of this study were conducted to determine the content of antimony in the PET container. This study included more than 200 process food (milk, fruit juice, beer, beverage, sauce, oil, vinegar, etc.)
According to Korea Food Code, samples were digested by microwave digestion system. Sb were analyzed by using ICP-MS (Inductively Coupled Plasma Mass Spectrometer). Limit of detection was 0.0023 mg/kg and limit of quantization was 0.0064 mg/kg. Also, RSD was less than 5 %. Furthermore, Validation Study for established method were carried out by evaluation linearity, limit of detection, limit of quantification, accurary, precision and quality management using a Certified Reference Material(CRM).
According to the analysis results of the Sb contents in process food in the PET container, Sb was low levels in food consumed in Korea.



Coffee Break & Group Photo Taking	**15:00~15:15**

Session 2

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: “Food Science and Botany”

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

E0003 Presentation 1 (15:15~15:30)

Salt reduction: Translation of consumer expectations into wishful taste product attribute

Jasmina Ranilović, **Davorka Gajari**, Helena Tomić-Obrdalj, Tanja Cvetković and Irena Colić Barić

Podravka Inc., Research and Development, Koprivnica, Croatia

Abstract—Food industry has responsibility to improve their products in terms of salt content as consumers hold them responsible for their excess consummation. Data suggests that personal preferences in salt liking would influence the acceptance of salt reduced food product. Replacing table salt with a new and innovative salt substitute pose a great challenge for salt reduced food product, from technological and sensory point of view. In this paper specific circumstances were described that influenced a decision for invention of new table salt substitute as a solution for reducing salt content and for the first time, the sensory results of 25% reduced salt soup made with the innovative ingredient. For the two thirds of the participants (n=101), reduced salt soup was adequate in saltiness and good overall palatability, without off-flavour. These promising results give a solid baseline for further application of a new salt substitute in a various food products range without compromising the taste.

Session 2

Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: “Food Science and Botany”

Session Chair: Prof. Raquel de Pinho Ferreira Guiné

S0021 Presentation 2 (15:30~15:45)

Behavior of *Listeria monocytogenes* during the manufacture and after HPP of dry-cured sausages: effect of fat content and curing salts

Begoña Rubio, **Francisco Pérez** and Beatriz Martínez

Instituto Tecnológico Agrario de Castilla y León, Valladolid, España

Abstract—To evaluate the behavior of *Listeria monocytogenes* “chorizo” with high or medium fat level and with or without curing salt were intentionally contaminated and manufactured according to a traditional process. After drying (60 days), a HPP of 500 MPa for 7 min was applied to different batches. At the end of drying process, the sausages presented a_w values of 0.775-0.808 and pH values of 4.8-4.9, typical values of Spanish “chorizo”. A clear effect of fat content and curing salts addition was observed on *Listeria monocytogenes* counts. This pathogen grew during fermentation process in all batches except in “chorizo” made with medium fat content and curing salts; in this “chorizo” type, *Listeria monocytogenes* counts decreased. Finally, no inactivation on *Listeria monocytogenes* due to HPP was observed.

Session 2

Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: "Food Science and Botany"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

S3001 Presentation 3 (15:45~16:00)

Bioactive components and pharmacological properties of edible bird's nest

Sue-Siang Teh and Zheng-Feei Ma

Tunku Abdul Rahman University College, Jalan Genting Kelang, Setapak, 53300 Kuala Lumpur, Malaysia

Abstract—Edible bird's nest (EBN) refers to animal product, namely solidified saliva from edible bird's nest swiftlet species in the genus of *Aerodramus fuciphagus* and *Collocalia sumbawae*. The shallow cup shaped of the nests are composed of interwoven strands of salivary cement, constructed by the male swiftlet on the upper part of the cave walls over a period of 35 days during the breeding season. The EBN has been used for centuries among Chinese communities. However, the hefty price of the EBN only allows the privilege groups to afford it. Long term EBN consumers claimed that they do see or feel the health benefits given by the EBN although many people have doubt with the health benefits of EBN for centuries. In fact, the health benefits of the EBN lies in the bioactive components and nutrition values of the EBN. In order to clarify the exact health benefits contributed by EBN, the bioactive components in EBN that exhibit the bioactive and pharmacological activities were reviewed with the scientific proofs and clinical studies. The sialic acid comprises of 9 - 12% in EBN, which possesses health benefits such as healthy nerve and brain function, immune-enhancing activity, memory enhancement. Other bioactive components such as epidermal growth factor (EGF), N-acetylgalactosamine (galNAc), N-acetylglucosamine (glcNAc), galactose and fucose which exhibit the neurotrophic activity, cartilage regeneration, anti-arthritis, healthy brain development and anti-microbial activity were reviewed in detail here. Nutritional values such as mineral compositions, amino acid content and the polysaccharides components in relation to human nutrition and health were highlighted here.

Session 2

Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: “Food Science and Botany”

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

S2004 A Presentation 4 (16:00~16:15)

Humans share food more generously than money

Agnieszka Sorokowska and Piotr Sorokowski

Institute of Psychology, University of Wroclaw, Poland

Abstract—Despite numerous anthropological studies on food sharing, the topic remains insufficiently explored. From the evolutionary perspective, sharing food should be of greater importance than sharing other objects, mostly because food allows recipients to survive. Consequently, we assumed that people do not show the same level of generosity when sharing goods critical for survival (i.e., food) and goods that do not directly increase chances to survive in the natural environment (i.e., money, inedible items). To test our prediction, we performed two natural experiments. In the first one, a confederate dressed up as a poor-looking person approached people in front of a bakery (N = 114). The confederate asked each person for money, money for bread, or bread. We found that people shared bread more often than they shared money. In the second experiment, participants (N = 239) were asked to donate either food or inedible items such as hygienic products or school accessories to a social welfare center. Again, people shared food more often than they shared inedible items. We discuss the relevance of our findings in the context of uniqueness of food for humans, adaptive behaviors related to food, and suggest that food has played a special role in human history, potentially leading to the development of a special food sharing preference.

Session 2

Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: “Food Science and Botany”

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

E0002 A Presentation 5 (16:15~16:30)

Economics of Food and Meat Waste

Jad R. Ziolkowska

University of Oklahoma, Department of Geography and Environmental Sustainability, Norman, OK, United States

Abstract—Global food waste amounts to ~30% of agricultural production (1.6 billion tons) annually (FAO, 2014). While meat waste makes 4% (52 million tons) of the total food waste, meat production requires more resources and has higher environmental impacts than crop production (Pimentel & Pimentel, 2008).
This paper evaluates and compares economic costs of meat and crop food waste based on the monetization methodology suggested by Ziolkowska (2017) for the United States.
The results show that the total annual costs related to food waste amounts to $65.5 billion on average, including energy, water, land costs, and methane emissions. The costs of meat waste were found to make ~49% of the total food waste costs. Annual land use costs ($13.6 billion) and energy costs ($13.1 billion) constitute the greatest expenses. At the same time, environmental costs of meat waste are smaller in their magnitude, with $3.3 billion resulting from methane emissions and $0.55 billion from water use.

Session 2

A Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: “Food Science and Botany”

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

E0006 Presentation 6 (16:30~16:45)

The purple coneflower’s herb yield’s and essential oil agents’ change under different fertilization settings

Judit Éva Lelesz

Institue of Crop Sciences, University of Debrecen, Debrecen, Hungary

Abstract—During our research we investigated the purple coneflower 's (Echinacea purpurea L.) herb yield’s and it’s essential oil active agents’ change under different fertilization settings in small-plot trial. We measured the raw drug yield, which we harvested in 2016 and in 2017. We made the harvest and all other works manually. We dried the harvested herba under prenumbra for three weeks. Based on the data, every fertilization settings’ yield was less than the control plots’ in 2016. In contrary to the 2016 year’s data, in 2017 we measured the highest yield data in the N75P100K150 fertilization setting. The drying loss of the investigated two years’ herb yields’ were fluctuating between the nutrient requirements.
We made single-factor variance analysis to investigate the connection between the quantity of the herba yield and the different nutrient settings. We used SPME (Solid Phase MicroExtraction) and GC-MS (Gas Chromatograph-Mass Spectrometer) we examined the effects of the different fertilization settings for the herb's main active ingredients of essential oil's percentage.

Session 2

Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: “Food Science and Botany”

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

E0008 A Presentation 7 (16:45~17:00)

The Growth of Jerusalem Artichoke(Helianthus tuberosus L.) as to the Level of Nitrogen content in Reclaimed tidal land in Korea

Yang-Yeol Oh, Jung-Tae Lee, Sun Kim, Jin-Hee Ryu, Su-Hwan Lee, Young-Joo Kim and Do-Ki Park

National Institute of Crop Science, RDA, Wanju-Gun, 55365, Republic of Korea

Abstract—Jerusalem Artichoke(Helianthus tuberosus L.) is known as salt tolerance. We assessed jerusalem Artichoke(Helianthus tuberosus L.) that could be grown in Saemangeum reclaimed tidal land in Korea in 2017. The objective of this study was to identify the optimal nitrogen fertilization rate for jerusalem Artichoke(Helianthus tuberosus L.) cultivation reclaimed tidal lands. Experimental sites were selected at Saemangeum (35o46’N, 126o37’E) reclaimed tidal land and their dominant soil series were Munpo (coarse loamy, mixed, non-acid, mesic, typic Fluvaquents). Jerusalem Artichoke(Helianthus tuberosus L.) seed sown in purple color collected from ‘Yeongwol-gun’. The nitrogen amount treatments were 0 kg/10a(N0), 5 kg/10a(N5), 10 kg/10 a(N10), 20 kg/10a(N20). Planting density were 70 x 25 cm, 70 x 50 cm, 70 x 75 cm treatments.

At any planting level treatments, N0 treatments had the smallest plant height. There was no significant difference from N5 and N10, N20 treatments.

Jerusalem Artichoke(Helianthus tuberosus L.) SPAD showed the highest N20 treatment at 3.3-3.4 and N0 treatment was lowest at 2.2-2.5. Yields was the highest N20(3515-3893 kg/10a), followed by N10(2248-3870kg/10a). However, it is necessary to judge the optimal N fertilization rate through economic analysis,

Our results indicate that the optimal nitrogen application rate is estimated to be at least 5 kg/10a in newly reclaimed tidal land.

Session 2

Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: “Food Science and Botany”

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

E3005 Presentation 8 (17:00~17:15)

Development of Functional Probiotic Carrot Juice by Lactic Acid Fermentation

Iqra Yasmin, **Wahab Ali Khan** and Prof. Dr. Masood Sadiq Butt

National Institute of Food Science & Technology, University of Agriculture Faisalabad, Pakistan

Abstract—Functional food products gaining importance day by day as the trend is shifted towards that food which provides certain health benefits beyond the basic nutrition. Functional food decreases the danger of cardiovascular diseases (CVD), a certain type of cancers and ultimately improve health. Nowadays, functional food market with special reference to probiotic products gaining interest and acceptance among the consumers. The present study was designed to develop fermented carrot juice by using probiotic (Lactobacillus plantarum and Lactobacillus acidophilus). The single and mixed culture was used for the inoculation of carrot juice and the effect of different starter culture on fermentation ability, growth and survival of probiotic was evaluated. Lactobacillus plantarum and Lactobacillus acidophilus were efficiently used for fermentation of carrot juice and produce lactic acid. It was found that carrot juice was the potential substrate for the development of probiotic beverage. Carrot juice was analyzed for different physicochemical analysis (Brix, pH, acidity, sugar) and viability of probiotics was analyzed after 7, 14, 21 and 28 days of storage interval at 4oC. It was observed both probiotic culture efficiently used sugar of carrot juice as a result pH decreases and acidity increases. But increase in pH and decrease in acidity is quicker in the juice inoculated with L. acidophilus as compare to L. plantarum, this is due to faster consumption of sugar by L. acidophilus. In all the samples probiotics survive and cell count was (106-108 CFU/ml) during storage at 4oC. Viability was maximum during the first week of storage but decreases gradually after 28 days of storage. It is concluded that both cultures were able to survive in fermented juices with low pH and high acidity. Carrot juice is an excellent vehicle for probiotics delivery and could be used as a functional beverage to boost health and nutrition of the population, especially vegetarians and lactose intolerance consumers.

Session 2

Afternoon, May 14, 2018 (Monday)

Time: 15:15~17:30

Venue: room 39

9 presentations- Topic: “Food Science and Botany”

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

E0004 Presentation 9 (17:15~17:30)

The effects of magnetic fields on plants growth: A comprehensive review

Nyakane, **ED Markus**, M. Sedibe

Central University of Technology, Bloemfontein Free State 9301, South Africa

Abstract—Climate change is a key global concern particularly in the field of agriculture. Farmers around the world mainly in developing countries are faced with the critical problem due to reduction of potential crop yields and a decrease in water availability for irrigation and increasing food demands to cover the population needs. As a result, water shortage and poor yield are being increasingly accepted as major limitations. Researchers have documented that magnetic treatment can conserve both the quantity and quality of water and crop yield. This paper presents an extensive survey of studies on the effects of the fields on plants over the past 20 years. Many aspects of plants growth, yield, quality and water as affected by magnetic fields (MF) are investigated. Magnetic effects on various biological systems are also reviewed. Conclusions are drawn on the merits and demerits of the effects of these magnetic fields and recommendations are proffered as to how these fields can be enhanced in the plants and water. Surveying plant behavior under magnetized water, different magnetic frequency and time exposure based on limited number of articles retrieved, revealed that these circumstances has influence on physiological activities of plants such as; growth, yield, quality, biological system and chemical component of water. In addition, other scientists have found that weak MF suppressed this growth, reduced cell division, and intensified protein synthesis and/or cause disintegration in plant roots. Nevertheless, other studies found an increase in plant growth such as enhancing seed growth for some species. The inconsistency and contradictory outcomes from the studies appear to indicate that the effects of MF on plants may be dependent on species and/or MF characteristics such as intensity and exposure time.

POSTER

May 14, 2018 (Monday)

Time: 9:20~17:30

Venue: room 39

E3006 Presentation (9:20~17:30)

Method for Comparing and Verifying Physical Data concerning Pruning of Plum Tree Branches by Wearable Sensing Systems

Shinji KAWAKURA, Ryosuke SHIBASAKI

National Institute of Advanced Industrial Science and Technology/Department of Information Technology and Human Factors, Tsukuba, Japan

Abstract—We have developed a multitudinous analysis system for agricultural applications. The system investigates and verifies the accuracy of kinematic direct sensing and visual analysis systems for workers and trainers engaged in pruning and shaping tree branches using small saws. The purpose of these activities is to improve ventilation and provide nourishment to trees more efficiently. In addition to aesthetic reasons, they also prevent infections in trees and stop the breeding of harmful insects. We used existing wearable sensing equipment that uses IPhone applications and MS Excel's VBA program to get the Fast Fourier Transform (FFT) of signals for obtaining the characteristics of the difference of motion between experienced and inexperienced workers carrying out various agricultural tasks. For this purpose, the direct current (DC) value and standard deviation (SD) of acceleration and angular velocity were used. As pruning of trees is a universal activity, our proposed system and methodology can prove to be useful around the world.

POSTER

May 14, 2018 (Monday)

Time: 9:20~17:30

Venue: room 39

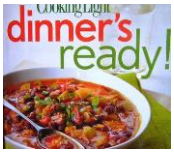
E1001 Presentation (9:20~17:30)

Effect of Ratios of Okra Gac Fruit and Passion Fruit on Color and Preferences of Mixed Juice

Wattana Wirivutthikorn

Rajamangala University of Technology Thanyaburi (RMUTT) 2 Phaholyothin 87 Soi 2 Phaholyothin Road Thanyaburi Pathumthani 12130 Thailand

Abstract—The objective of this research was to study the optimum ratios of okra, gac fruit and passion fruit on beverage production. Four ratios of okra, gac fruit and passion fruit were performed into 4 experiments. Experiment 1: (control formula) okra: gac fruit: passion fruit 50:50:0 ratio. Experiment 2: okra: gac fruit: passion fruit 50:40:10 ratio. Experiment 3: okra: gac fruit: passion fruit 40:40:20 ratio. Experiment 4: okra: gac fruit: passion fruit 40:30:30 ratio. Study physical measurements, i.e. color measurement and sensory evaluation were performed. The results showed that all values from all experiments were statistically significant differences. ($P<0.05$) Sensory evaluation test was done by using 9-point hedonic scale showed that Experiment 3 was the most acceptable from panelists.



Dinner	**18:30**

One Day City Tour

May 15, 2018 (Tuesday) 8:45~17:00

(Tip: Please arrive at "Hard Rock Café - Restauradores Square" before 8:45 a.m. The following places are for references, and the final schedule should be adjusted to the actual notice.)

1. **(8:45) Assemble at Hard Rock Caf é - Restauradores Square**

2. **(9:00) Set out**

3. **(9:30)Visit Palacio Nacional de Sintra (not include ticket) and Palacio da Pena(include ticket)**

Nothing in Portugal stands out quite like the vibrant colors and unusual architecture of Pena Palace.Pena National Palace is located within western Portugal Sintra Mountains.Although the palace's very design touches make it appear as though it has been built from multiple pieces of different castles, the building's unusual style is the result of an owner with extremely flamboyant tastes. The palace was owned by King Ferdinand II, who built it to serve as a summer home for Portuguese royals in the late 18th century. The castle itself is built around an old monastery, and is made up of colored sections, including a red clock tower and a yellow minaret. During the revolution of 1910, the royals fled and the palace and its grounds were abandoned. It wasn't until the 20th century that it was restored by the state and earned itself a UNESCO Heritage Site designation. King Ferdinand's wide ranging tastes have made Pena Palace a microcosm for all the styles of architecture the world has to offer

4. **(11:30) Lunch(at own expense)**

5. **(12:30) Visit Cape Roca(Cabo da Roca)**

6. **(14:00) Visit Guincho beach**

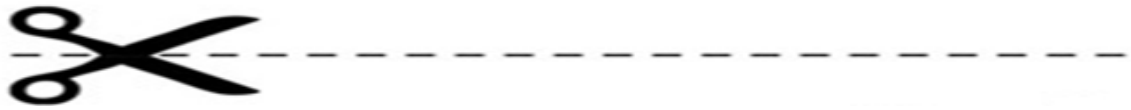
7. **(15:00)Visit Cascais**

8. **(16:00) Visit Estoril**

9. **(17:00) Back to Lisbon**

Note

Note



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					
Presentation and Paper Value					
Registration Process					
Venue					
Food and Beverage					

Are You A Member of HKCBEES	Yes □ No □ (If "No", you may apply membership from http://www.cbees.org/list-34-1.html)
Do You Willing to Receive HKCBEES Future Conferences Information Via E-mail	Yes□ No□
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 □ Yes- But not to my full extent □ No□ (If "No", please tell us the main reason)

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

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! More conference information could be found in http://www.cbees.org/list-15-1.html