# 2017 HKCBEES AUCKLAND CONFERENCE ABSTRACT

**2017 5th International Conference on Food and Agricultural Sciences**

**(ICFAS 2017)**

**2017 2nd International Conference on Nutrition and Food Engineering**

**(ICNFE 2017)**

## The University of Auckland Science Centre, New Zealand

## November 23-25, 2017

**Sponsored and Published by**

**indexed by**

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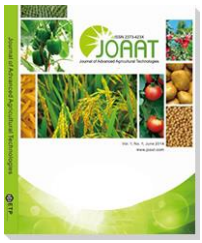
# Auckland Conference Introductions

Welcome to 2017 HKCBEES Auckland conference. This conference is organized by HKCBEES. The objective of the Auckland 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 Sciences; Nutrition and Food Engineering.

**2017 5th International Conference on Food and Agricultural Sciences (ICFAS 2017)**

**Papers will be published in the following journals:**



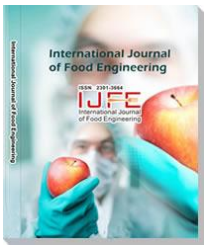

**Journal of Advanced Agricultural Technologies (JOAAT, ISSN:2301-3737),** and all papers will be included in the Ulrich's Periodicals Directory, Google Scholar, Engineering & Technology Digital Library, Wourldcat and sent to be reviewed by Ei Compendex and ISI Proceedings.

**International Journal of Chemical Engineering and Applications (IJCEA ISSN: 2010-0221),** and will be included in Chemical Abstracts Services (CAS), Ulrich's Periodicals Directory, CABI, DOAJ, Electronic Journals Library, Google Scholar, Engineering & Technology Digital Library, ProQuest, and Crossref.

**Conference website and email: http://www.icfas.org/; icfas@cbees.net**

**2017 2nd International Conference on Nutrition and Food Engineering (ICNFE 2017)**

**Papers will be published in the following journal:**




**International Journal of Food Engineering (IJFE, ISSN: 2301-3664),** and be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, DOAJ, Doi system.

**Conference website and email: http://www.icnfe.org/; icnfe@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 **35** Minutes of Presentation and **5** Minutes of Question and Answer
Plenary Speech: about **20** 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

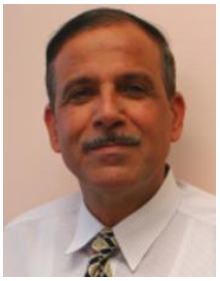
One Best Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on November 24, 2017.

## Dress code

Please wear formal clothes or national representative of clothing.

# Keynote Speaker Introductions

## Keynote Speaker I



Prof. Mohammed Mehdi Farid

The University of Auckland, New Zealand

**Professor Mohammed Farid** obtained his PhD and MSc in Chemical Engineering from the University of Swansea, Wales and his BSc in Chemical Engineering from the University of Baghdad.

He was the founder of the Department of Chemical Engineering at the University of Basrah in 1983. Since then, he worked as a full professor in the Jordan University of Science and Technology, the University of Science Malaysia and since 1997 in The University of Auckland, New Zealand.

He is a Fellow of the Institution of Chemical Engineers, London and an active member of a number of international societies. He has published more than 360 papers in international journals and refereed international conferences, 6 patents, 5 books and 10 chapters in books.

Farid has received a number of international awards such as the Matsumae International Fellowship from Japan (1986), a prestigious prize for being the most active in research in the University of Basrah (1990), the Hisham Hijjawi Award for Outstanding Scientific Achievement in Research in Jordan (1993) and the Marie Curie Fellowship, from European Union (2010) for his exceptional contribution to research on energy storage.

In 2010, he was short listed and came in the third place for the IChemE Innovator of the Year Award – sponsored by NES in the UK, and has been invited to a large number of international conferences as a keynote speaker. iN 2015, he was awarded the IAEF Lifetime Achievement Award in Food Engineering.

He is a member of the editorial board of three international journals and has been invited to join a number of scientific committees of international conferences.He is a world leader in energy storage with phase change and has provided significant contribution to the field worldwide.

His research expertise covers many other important areas such as the thermal and non-thermal processing of food processing, biofuel and waste management

Topic: “Innovative Technologies for Pasteurisation, Sterilisation and Extraction at Reduced Temperatures”

Prof. Mohammed Mehdi Farid
The University of Auckland, New Zealand

*Abstract*—Food is commonly pasteurised and sterilized thermally to keep it safe, accepting the fact that the excessive heat used in the processing could create significant changes in food’s taste, colour and texture and could also induce negative impact onto its nutritional value. High pressure processing (HPP), pulsed electric field (PEF), and UV processing have already been applied commercially to pasteurise varieties of food products at low temperatures, minimising the thermal abuse to foods. In this presentation, we shall illustrate the application of some of these technologies to a number of food products, for pasteurisation and for improving their nutritional value. An example of using PEF for extraction will be also described. However, the major focus in this presentation will be directed to explain how combinations of heat and one of these innovative technologies could produce shelf stable (sterilised) or an extended shelf life (ESL) products at lower treatment temperature and hence improve foods nutritional value. This approach of using hurdle technologies has shown recently a growing research interest and we expect commercial applications to appear in the few years to come.

# Plenary Speaker Introductions

## Plenary Speaker I

Assoc. Prof. Susan Bastian

School of Agriculture, Food and Wine, The University of Adelaide, Australia

**Dr. Susan Bastianis** an Associate Professor in School of Agriculture, Food and Wine, The University of Adelaide. A large amount of her past and current research focuses on areas of significance along the value chain of grape and wine production in relation to: viticulture management and wine production effects on grape and wine quality; relationships between grape and wine sensory attributes, composition and quality; molecular drivers of sensory profiles; perception of wine and beer astringency and body; alternative grape varieties in Australia; Australian wine terroir, regionality and provenance; wine consumer marketing, cross-cultural differences, perception, preference, emotions, context and predicting consumer behaviour; wine and food interactions; flavour additives in wine; wine neophobia; new wine and food product development; rapid wine sensory methods and wine and food extracts in health, mucositis and colon cancer.
Her group have also conducted sensory research on abalone, chocolate, cheese, tomato, muntries, chicken meat, eggs and beer.

Her currently oversee a number of projects. In 2015 I was awarded funding from the South Australian River Murray Sustainability – Industry-led Research Sub-Program (IRSP) PIRSA 2015 as Principal Investigator (PI) in addition to funding from the Australian and Chinese wine and beverage industries to define a niche wine market opportunity in China, determine consumer extrinsic and intrinsic wine preferences, generate wine and packaging concept designs, conduct market evaluation of concepts plus undertake a feasibility review to ascertain the capacity of the Riverland wine region to make and determine production costs of such wines. I'm also PI on a 4.5 year Wine Australia funded project to examine contextual effects on Australian wine consumers' perceptions and preference and the wine attributes that drive both consumer emotions, liking and willingness to pay which completes in mid-2017.

Multiple publications have arisen from this research which were the first to reveal wine product evoked consumer emotions; novel consumer segmentation bases; better consumer research method practices; influence of consumer research testing situations and novel rapid methods for wine flavour profiling using trained panellists and consumers. In 2017 my collaborators and I (at 20% in-kind) were awarded a Wine Australia 5 year project on understanding the drivers of terroir in the Barossa Valley. The outcomes of my previous research have already been capitalised on, adding value to operations through improvements to production systems in areas such of salt management and fruit processing.

Topic: "Consumer Centric Innovative Product Development: From Ideation to the Shelf - Current and Future Perspectives and Methods"

Assoc. Prof. Susan Bastian

School of Agriculture, Food and Wine, The University of Adelaide, Australia

*Abstract*—This presentation explores the use of sensory science as an applied business strategy to develop consumer-driven food and beverage products (using wine as a test case), from idea inception though to final product approval just prior to product launch. Essential topics including consideration of target market, product intrinsic and extrinsic properties, product information, emotions, and context; plus current and future application of technology such as internet testing, immersive technology, and the use of consumers for rapid product sensory profiling and product optimisation, will also be discussed. Finally, wine case studies will be outlined which describe product development and optimisation using holistic sensory and consumer methods.

| | |
|---|---|
| **Coffee Break & Group Photo Taking** | **10:05~10:25** |

# Plenary Speaker II

Dr. Wei Yu

The University of Auckland, New Zealand

**Dr. Wei Yu** starts his new career as a lecturer of Chemical and Materials Engineering at the University of Auckland at 2012. He was promoted to senior lecturer in 2015. He worked as a postdoctoral fellow at Industrial Information and Control Centre (I2C2), Faculty of Engineering, The University of Auckland, New Zealand from 2008 to 2011. He received his B.E. (1993) degree in Chemical Engineering from Liaoning University of Petroleum and Chemical Technology, Fushun, P.R. China, Master (2003) and Ph.D. (2007) degree in Chemical Engineering from the Queen's University, Canada. He worked as a process engineer at West Pacific Petrochemical Company, Dalian, P.R. China from 1993-1999. His main research interests include control performance assessment, analysis of variance, process control and system identification.

Topic: “Real-time Food Quality Prediction”

Dr. Wei Yu
The University of Auckland, New Zealand

*Abstract*—Food processing is an industry that is of primary importance to many economies, especially New Zealand where many products have a clean, green and/or healthy image that is important to their final market. To maintain product quality and traceability, reduce process costs, food industry is facing many challenges from consumer trends, regulatory requirements, resource costs, seasonal variations, weather conditions and new technology. Over the last decade, there has been a deliberated shift from the controlling of production to a focus on quality in petrochemical, pharmaceutical and food industries. This change is driven by the eco-efficiency and process-efficiency that the product quality should not be tested by post-manufacturing quality test. The modern approach, process analytical technique (PAT), representing a tool including instrument measure, multivariate data analysis and process control, has become a key enabler to achieve this level of assurance.

In this presentation, PAT to supporting and enhancing the food processing industry entitled ‘Real-time Quality’ is briefly introduced. Then the PAT application for dairy plant and milk powder functionalities will be demonstrated. The principal component analysis (PCA) was employed to discriminate between milk powders. The correlation between HSI data and milk powder quality attributes such as dispersibility were also built in this study using partial least squares regression (PLSR).

# Brief Schedule for Conference

| | |
|---|---|
| **Day 1** | **November 23, 2017 (Thursday)** 10:00~17:00<br>**Venue: Foyer B00L2**<br>**Science Building 303 in the University**<br>Participants Onsite Registration & Conference Materials Collection |
| **Day 2** | **November 24, 2017 (Friday)** 8:50~18:05<br>Registration, Keynote Speech, Plenary Speech and Conference Presentation |
| | **Morning Conference**<br>**Venue: 303-B09** |
| | **Opening Remarks** 8:50~9:00<br>Dr. Wei Yu<br>The University of Auckland, New Zealand<br>**Keynote Speech I** 9:00~09:40<br>**Topic: "Innovative Technologies for Pasteurisation, Sterilisation and Extraction at Reduced Temperatures"**<br>(Prof. Mohammed Mehdi Farid, The University of Auckland, New Zealand)<br>**Plenary Speech I** 9:40~10:05<br>**Topic: "Consumer Centric Innovative Product Development: From Ideation to the Shelf - Current and Future Perspectives and Methods"**<br>(Assoc. Prof. Susan Bastian, School of Agriculture, Food and Wine, The University of Adelaide, Australia) |
| | **Coffee Break & Group Photo Taking** 10:05~10:25 |
| | **Plenary Speech II** 10:25~10:50<br>**Topic: "Real-time Food Quality Prediction"**<br>(Dr. Wei Yu, The University of Auckland, New Zealand) |
| | **Session 1:**10:50~12:20<br>6 presentations-Topic: "Food Analysis and Medical Chemistry" |
| | **Lunch 12:20~14:00**<br>**Venue: Foyer Area** |
| | **Afternoon Conference**<br>**Venue: 303-B09** |
| | **Session 2:**14:00~15:45<br>7 presentations-Topic: "Food Processing and Chemical Engineering" |
| | **Coffee Break** 15:45~16:05 |
| | **Session 3:** 16:05~18:05<br>8 presentations-Topic: "Agricultural Science and Food Engineering" |
| | **Dinner 18:10** |

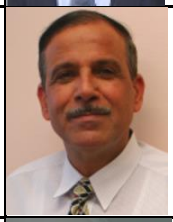
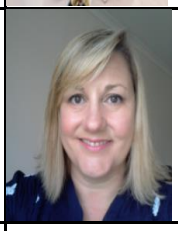
| | |
|---|---|
| | **Venue: Ascotia Off Queen** |
| **Day 3** | **November 25, 2017 (Saturday) 9:00~17:00**<br>**One Day Academic Visit** |

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

# Detailed Schedule for Conference

## November 24, 2017 (Friday)

## Venue: 303-B09

| | | |
|---|---|---|
| **8:50~9:00** | | **Opening Remarks**<br>Dr. Wei Yu<br>The University of Auckland, New Zealand |
| **9:00~09:40** |  | **Keynote Speech I**<br>Prof. Mohammed Mehdi Farid<br>The University of Auckland, New Zealand<br>Topic: "Innovative Technologies for Pasteurisation, Sterilisation and Extraction at Reduced Temperatures" |
| **9:40~10:05** |  | **Plenary Speech I**<br>Assoc. Prof. Susan Bastian<br>School of Agriculture, Food and Wine, The University of Adelaide, Australia<br>Topic: "Consumer Centric Innovative Product Development: From Ideation to the Shelf - Current and Future Perspectives and Methods" |
| **10:05~10:25** | **Coffee Break & Group Photo Taking** | |
| **10:25~10:50** | | **Plenary Speech II**<br>Dr. Wei Yu<br>The University of Auckland, New Zealand<br>Topic: "Real-time Food Quality Prediction" |
| **10:50~12:20** | **Session 1-6 presentations-Topic: "Food Analysis and Medical Chemistry"** | |
| **12:20~14:00** | **Lunch** | |
| **14:00~15:45** | **Session 2-7 presentations-Topic: "Food Processing and Chemical Engineering"** | |
| **15:45~16:05** | **Coffee Break** | |
| **16:05~18:05** | **Session 3-8 presentations-Topic: "Agricultural Science and Food Engineering"** | |
| **18:10** | **Dinner** | |

**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 November 24, 2017.**

# 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.**

## Morning, November 24, 2017 (Friday)

## Time: 10:50~12:20

## Venue: 303-B09

## 6 presentations- Topic: "Food Analysis and Medical Chemistry"

## Session Chair: Dr. Wei Yu

N0003 Presentation 1 (10:50~11:05)

Application of Sensory Evaluation in Flavor Analysis of Pomegranate Juice

**Noppawan Noomsiri** and Yaowapa Lorjaroenphon

Department of Food Science and Technology, Kasetsart University, Bangkok, Thailand

*Abstract*—Pomegranate juice has become a popular fruit juice not only because of its pleasant flavor but also health promoting benefits. This research is aimed to establish consumer acceptance, to investigate flavor descriptors and to identify flavor compounds of pomegranate juice. Five pomegranate juice samples (Fresh-1, Fresh-2, Commercial-1, Commercial-2 and Commercial-3) were evaluated by consumer acceptance test. Fresh-1 and Commercial-1 obtained the highest liking score for all attributes ($p \leq 0.05$), except sour and sweet tastes. However, Commercial-1 received higher liking score for aroma and sour taste than Fresh-1 ($p \leq 0.05$). Therefore, it was selected to evaluate flavor profile using descriptive test. Seven aromas by nose, four aromas by mouth, along with three tastes, one trigeminal and two aftertastes were detected by trained panel. Moreover, major volatile aroma compounds in Commercial-1 were identified using headspace solid phase micro-extraction (HS-SPME) and gas chromatography–time-of-flight mass spectrometer (GC-TOFMS). Taste compounds were also determined by high performance liquid chromatography (HPLC).

# Session 1

## Morning, November 24, 2017 (Friday)

## Time: 10:50~12:20

## Venue: 303-B09

## 6 presentations- Topic: "Food Analysis and Medical Chemistry"

## Session Chair: Dr. Wei Yu

N0009 Presentation 2 (11:05~11:20)

Detection of Salt Content in Raw Milk on a Gold Electrode through Cyclic Voltammetry

CHEN Xing-guang, CHU Bei-bei, LAI Li-zhi, PENG Hui-feng, DENG Dan-wen, **HUANG Gan-hui**

State Key Laboratory of Food Science and Technology(Nanchang University), Nanchang, China

*Abstract*—The relationship model of chloride ion content and oxidation peak current was established by the study of curve obtained by using gold electrodes to test cyclic voltammetry in raw milk containing different chloride ion concentrations. The study found that with the increased of chlorine ion content, the potential of the oxidation peak was in positive correlation and the current of the peak increased dramatically. The golden matter appeared in sample liquid. In addition, we observed that corrosion in gold electrode, and the characteristic peak of Au-$Cl^{-1}$ appeared at 269$cm^{-1}$ by using SEM and SERS to detect the reaction electrode. The results showed that the gold electrode had the anodized dissolution because of the presence of chloride ion. The prediction model of chloride ion content with a detection limit of 0.05g/L was established by the least square method. The recovery rate and relative standard deviation of the method were respectively from 91.0% to 106.0% and from 3.4% to 4.2%. The method is suitable for rapid detection of milk mixed with salt.

# Session 1

## Morning, November 24, 2017 (Friday)

## Time: 10:50~12:20

## Venue: 303-B09

## 6 presentations- Topic: "Food Analysis and Medical Chemistry"

## Session Chair: Dr. Wei Yu

E1005 Presentation 3 (11:20~11:35)

Development of An Electronic Nose System to Detect Strawberry Bruise

Mengke Xing, Ke Sun, Nan Zhao, Leiqing Pan, **Kang Tu**

College of Food Science and Technology, Nanjing Agricultural University, Nanjing 210095, China

*Abstract*—A newly self-developed electronic nose (E-nose) system for the detection of "*Hongyan*" strawberry freshness at different storage periods was studied. The system consisted of six metal oxide semiconductor (MOS) sensors connected to a data acquisition system and a computer with pattern recognition software. The freshness of strawberries was evaluated according to their weight loss, firmness, and soluble solids content (SSC). The aroma emitted by "*Hongyan*" strawberry samples was detected during post-harvesting storage, and stable E-nose response values were used to develop cluster analysis and classification models. The successive projections algorithm (SPA) was employed to optimize the sensors array, and the resulting models were compared with the commercial electronic nose PEN 3 (Germany). The results showed that the developed E-nose was able to differentiate decayed from fresh strawberries after processing with principal component analysis (PCA). Partial least squares discriminant analysis (PLS-DA) and support vector machine (SVM) models were built to separate strawberry samples according to their freshness levels: fresh, medium, slight spoilage, and serious spoilage. The SVM model was demonstrated to be highly efficient than the PLS-DA model. Better results were obtained with the optimized sensor array, and classification accuracy was satisfactory compared to data obtained with the commercial E-nose. This newly developed system should provide a potential non-invasive methodology for detection of strawberry freshness at low-cost.

# Session 1

## Morning, November 24, 2017 (Friday)

## Time: 10:50~12:20

## Venue: 303-B09

## 6 presentations- Topic: "Food Analysis and Medical Chemistry"

## Session Chair: Dr. Wei Yu

N1006 Presentation 4 (11:35~11:50)

Water sorption, glass transition, and caking properties of mango pulp-maltodextrin powders

**Suwalee Fongin**, Kiyoshi Kawai and Yoshio Hakura

Graduate School of Biosphere Science, Hiroshima University, Hiroshima, Japan

*Abstract*—Water sorption, glass transition, and caking properties of freeze-dried mango pulp-maltodextrin (MP-MD) mixtures were studied. Freeze-dried MP-MD samples were prepared at intervals of 20 % MD content, and the samples were stored in various relative humidity (RH) conditions at 25 ℃. Water content, glass transition temperature ($T_g$), and caking index of the samples were investigated by gravimetric method, differential scanning calorimetry (DSC), and sieve method, respectively. Water sorption data (water content vs RH) showed a sigmoidal behavior, and they were analyzed by the Guggenheim, Anderson and de Boer equation. DSC curve showed an endothermic shift due to glass transition, and $T_g$ was determined from the onset point. The $T_g$ decreased with an increase in water content, and they were analyzed by the Gordon-Taylor equation. From the results, water content of which $T_g$ indicated 25 ℃ was determined as critical water content ($W_c$). As expected, $T_g$ and $W_c$ values increased with increase in MD content. Caking index drastically increased at a certain RH condition depending on the MD content. The higher MD content, the greater resistant to caking was observed. The caking index could be described as a function of temperature difference between circumstance temperature and $T_g$.

# Session 1

## Morning, November 24, 2017 (Friday)

## Time: 10:50~12:20

## Venue: 303-B09

## 6 presentations- Topic: "Food Analysis and Medical Chemistry"

## Session Chair: Dr. Wei Yu

N2001 Presentation 5 (11:50~12:05)

Phytochemical Content, Antioxidant Capacity, and Antibacterial Property of Bran Extracts of Some Philippine Rice Cultivars

**Rosaly V. Manaois**, Amelia V. Morales, John Edward I. Zapater, Jay Carl A. Cacerez

Rice Chemistry and Food Science Division, Philippine Rice Research Institute, Maligaya, Science City of Muñoz, Nueva Ecija 3119, Philippines

*Abstract*—This work assessed the phenolic content, antioxidant capacity, and potential antibacterial activity of bran of some Philippine varieties. The phytochemical content, namely the phenolic, anthocyanin, and total flavonoid content (TFC), of the bran of 18 Philippine rice varieties differing in pigmentation (none, red, black) were assayed. The antioxidant capacity of the samples were determined using the 2,2-diphenylpicrylhydrazyl radical scavenging method. Highest levels of anthocyanin were recorded in black rice bran samples. Generally, red and black samples contained greater amount of free (46-121 mg gallic acid equivalent (GAE)/g), bound (24-125 mg GAE/g), and total phenolics (89-193 mg GAE/g), and exhibited stronger antioxidant potential (28-368 μmol/g) than the non-pigmented brans. The reddish bran of Kamanga had the highest TFC (90.1 ±2.1 mg rutin hydrate equivalent/g) and antioxidant capacity (368.2 ±9.2 μmol/g). Trans-ferulic acid was detected in all samples (30-40 μg/g), while cyanidin-3-glucoside was present only in the bran of black rices (363-4,073 μg/g). Microbial analysis revealed that bran extracts of red Minaangan and Kamanga and black Inipot Ibon and Ingopon at concentrations of ≥50,000 μg/g showed positive inhibitory properties against *Staphylococcus aureus* and *Clostridium perfringens*. Results indicate the potential of pigmented rice bran as an alternative source of antimicrobial and health promoting compounds in foods.

# Session 1

## Morning, November 24, 2017 (Friday)

## Time: 10:50~12:20

## Venue: 303-B09

## 6 presentations- Topic: "Food Analysis and Medical Chemistry"

## Session Chair: Dr. Wei Yu

N0010 Presentation 6 (12:05~12:20)

Antioxidant Effects of Peppermint (*Mentha piperita*) Extract on the Oxidative Balance of Rabbit Spermatozoa

**Eva Tvrdá**, Natália Konečná, Katarína Zbyňovská, Norbert Lukáč

Slovak University of Agriculture, Department of Animal Physiology, Nitra, Slovakia

*Abstract*—This study aimed to assess the effects of different concentrations (0, 1, 5, 10, 50 and 100 μg/mL) of the peppermint (*Mentha piperita*) extract on the motility and oxidative profile of rabbit spermatozoa following 0, 2, 4 and 8h of *in vitro* culture. Sperm motion was assessed using Computer aided sperm analysis, while reactive oxygen species (ROS) production and the total antioxidant capacity were assessed by chemiluminescence. Protein and lipid oxidation were evaluated using spectrophotometric assays. The experiments revealed that low peppermint concentrations (1-10 μg/mL) exhibited motility-promoting effects ($P<0.05$ and $P<0.01$; 8h). Peppermint concentrations ranging between 1 and 50 μg/mL led to a significant preservation of the intracellular oxidative balance of rabbit spermatozoa ($P<0.01$; $P<0.001$; 8h). All selected peppermint concentrations prevented oxidative degeneration of proteins and lipids ($P<0.05$; $P<0.01$; $P<0.001$; 8h). Our results indicate that the peppermint extract could delay oxidative damage inflicted to spermatozoa by the *in vitro* environment.

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|---|---|
| **Lunch** | **12:20~14:00** |

# 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, November 24, 2017 (Friday)

## Time: 14:00~15:45

## Venue: 303-B09

## 7 presentations- Topic: "Food Processing and Chemical Engineering"

## Session Chair: Prof. Mohammed Mehdi Farid

N0005 Presentation 1 (14:00~14:15)

Effects of Maltodextrin and Silicon Dioxide Added as Anticaking Agents on the Properties of Instant Date Palm (*Phoenix dactylifera* L.) Powder Using Spray Drying

Nutthamon Nortuy and **Niramon Utama-ang**

Lanna Rice Research Center, Chiang Mai University, Chiang Mai, Thailand

*Abstract*—Date palm (*Phoenix dactylifera* L.) is a highly nutritional fruit containing many health benefiting nutrients. The date fruit at Tarm (fully ripened) ripening stage is rejected by consumers as a result of its dark brown skin and bad appearance. Therefore, it is commonly processed into various products. This study aims improve the properties of instant date palm powder (IDPP) produced by spray drying by optimizing the amounts of the anticaking agents Maltodextrin (MD) and Silicon dioxide ($SiO_2$). MD (20-40 %w/v of date solution) was used in powder preparation then mixed with $SiO_2$ (0.5-1.5 %w/w of powder) and analyzed for its physicochemical properties and sensory acceptance. The results show that MD and $SiO_2$ significantly affected on properties of IDPP. Increasing the amount of MD and $SiO_2$ increased the yield recovery, tapped density and sensory acceptance score, while decreasing moisture content, bulk density, hygroscopicity (HG) and reducing sugar (RS). The optimized amounts of MD and $SiO_2$ in IDP production were 35.82 %w/v of date solution and 0.72 %w/w of powder respectively. These amounts provided the highest yield recovery (31.45±0.98%), tapped density (649.67±6.98kg/m$^3$) and sensory acceptance score (powder distribution was 7.6±0.6 and overall liking was 7.3±1.0), as well as the lowest moisture content (4.25±0.12%), bulk density (478.34±10.56kg/m$^3$) and HG (17.79±0.45%).

# Session 2

## Afternoon, November 24, 2017 (Friday)

## Time: 14:00~15:45

## Venue: 303-B09

## 7 presentations- Topic: "Food Processing and Chemical Engineering"

## Session Chair: Prof. Mohammed Mehdi Farid

N1008 Presentation 2 (14:15~14:30)

Effect of roasting on glass transition property and texture of hazelnut

**Tomomi Ebara**, Kiyoshi Kawai, Yoshio Hagura

Graduate School of Biosphere Science, Hiroshima University, Hiroshima, Japan

*Abstract*—It is practically important to understand glass transition temperature ($T_g$) of dry food products because their physical properties change drastically at the $T_g$. However, there was no report on the glass transition properties of hazelnut, thought it was expected that the texture change of hazelnut could be characterized by the $T_g$ as a function of water content. The purpose of this study, therefore, was to evaluate effect of water content on the glass transition and texture properties of raw and roasted hazelnuts. Glass transition of the hazelnut was detected clearly by thermal rheological analysis, and $T_g$ was evaluated as a function of water content. The $T_g$ decreased with increase in water content because of water plasticizing. The roasted hazelnut was lower $T_g$ than raw ones because of oil plasticizing. From the results, critical water content ($W_c$) of which glass transition occurred at 25 ℃ was evaluated. Texture properties of the hazelnut were investigated using a rheometer, and it was confirmed that fracture properties changed discontinuously at the $W_c$. These results will be useful to predict and control the physical quality of hazelnut

# Session 2

## Afternoon, November 24, 2017 (Friday)

## Time: 14:00~15:45

## Venue: 303-B09

## 7 presentations- Topic: "Food Processing and Chemical Engineering"

## Session Chair: Prof. Mohammed Mehdi Farid

E2002 Presentation 3 (14:30~14:45)

Utilization of drumstick (*Moringa oleifera*) for extraction, microencapsulation and designing health foods

**Harish K. Sharma**, and Monica Premi

Department of Food Engineering and Technology, Sant Longowal Institute of Engineering and Technology, (Deemed to be University), Longowal, Sangrur, Punjab, India

*Abstract*—Drumstick (*Moringa oleifera*) is an underutilized food commodity, despite of having potential, to be used as functional food ingredient in various food applications. Sponge cake was formulated with replacing wheat flour at 0, 2, 5 and 10% with drumstick leaves powder (DLP). No significant difference was observed in moisture, fat and carbohydrate content, sponge weight and water activity of the sponge cake, but, significant decrease was observed in volume with increasing DLP. Sponge cake hardness increased with increasing the replacement level. DLP incorporation significantly affected color of crust and crumb. SEM image analysis revealed that uniformity in structure was disrupted with increase in replacement level. DLP sponge cake with 2% replacement level had highest overall acceptability.

The processing conditions were optimized for the extraction of bioactive compounds from drumstick (*Moringa oleifera*) seeds to determine their potential as a source of nutraceuticals. A central composite face centered design was applied. A second-order polynomial model was used for predicting the responses. The optimum extraction conditions were found to be ethanol concentration, 49.8 %, extraction temperature, 80 ℃, extraction time, 45 min and particle size, 0.62 mm. LC–MS analysis under the optimum conditions showed 12 bioactive compounds, which possess different biological activities.

The effect of different combinations of carrier agents (maltodextrin, gum arabic and whey protein concentrate) was investigated on the emulsion properties, encapsulation efficiency and oxidative stability of encapsulated drumstick oil powder (EDOP), produced by spray drying

to increase its usage as an active ingredient. EDOP obtained from the MD:GA emulsion showed higher encapsulation efficiency than MD:WPC. Microcapsules, obtained by MD:GA carrier agent had medium flow properties and better oxidative stability. Microstructure of EDOP with MD:GA showed no cracks, smother appearance with continuous wall. EDOP with MD:GA had better stability and were stable at 45 ℃, which confirms the protective effect of this carrier agent in encapsulating the drumstick oil.

The comparative effect of drying methods was observed on the physical characteristics and oxidative stability of spray and freeze dried microcapsules. Spray dried EDOP showed better encapsulation efficiency, physical, flow and thermal characteristics than freeze dried EDOP. Spray dried EDOP depicted smooth spherical shape without pores, whereas, freeze dried EDOP showed flake like porous irregular particles. TGA thermograms revealed that thermal stability of spray dried microcapsules was superior as compared to freeze dried microcapsules. FT-IR analysis confirms the compatibility of core material with carrier agent ppm.

# Session 2

## Afternoon, November 24, 2017 (Friday)

## Time: 14:00~15:45

## Venue: 303-B09

## 7 presentations- Topic: "Food Processing and Chemical Engineering"

## Session Chair: Prof. Mohammed Mehdi Farid

E2003 Presentation 4 (14:45~15:00)

Applicability of Permeabilized Yeast Cells for the Production of Lactose Free Milk

**Parmjit S. Panesar**

Food Biotechnology Research Laboratory, Department of Food Engineering and Technology, Sant Longowal Institute of Engineering and Technology, India

*Abstract*—Lactose, the main carbohydrate present in milk, is not easily digested by a significant fraction of the global population. Lactose-intolerant persons not only suffer from mal-absorption but also suffer from general impairment of the normal digestive processes. Lactose ingested by such people cannot be hydrolyzed due to low levels of β-galactosidase in the jejunum, but is passed on either to the blood and eventually the urine or to the large intestine. Moreover, technologically, lactose easily crystallizes which sets the limits to certain processes in the dairy industry and can also result in development of sandy or gritty texture. The use of β-galactosidase most commonly known as lactase has been suggested for the production of lactose free milk. Moreover, this treatment can make milk, a most suitable food, available to a large number of adults and children which are intolerant to lactose. In order to overcome the problem of enzyme extraction and poor permeability of cell membrane to lactose, experimentation was carried to permeabilize yeast isolate for their subsequent use for the production of lactose hydrolyzed milk. Different process parameters such as biomass load, temperature, agitation and treatment time were optimized for maximum lactose hydrolysis in skim milk using the permeabilized yeast cells. The permeabilized yeast cells resulted in 90% hydrolysis of milk lactose under optimized conditions.

# Session 2

## Afternoon, November 24, 2017 (Friday)

## Time: 14:00~15:45

## Venue: 303-B09

## 7 presentations- Topic: "Food Processing and Chemical Engineering"

## Session Chair: Prof. Mohammed Mehdi Farid

E0004 Presentation 5 (15:00~15:15)

Continuous production of lactic acid in a two stage process using immobilized *Lactobacillus case*i MTCC 1423 cells

**Avinash Thakur,** Paramjit S. Panesar and Manohar S. Saini

Research Laboratory-III, Department of Chemical Engineering, Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur, Punjab, 148 106, India

*Abstract*—Experimental investigations has been carried to obtain high productivity of lactic acid by Lactobacillus (Lb.) casei MTCC 1423 cells immobilized in sodium alginate which is characterized by long term stability and high cell densities maintained in fermentation media. Influence of sugar concentration and dilution rate on lactic acid production in a continuous two stage process consists of constant stirred tank reactor and a packed bed column by immobilized Lb. casei cells has been investigated. After the 1st stage reactor (CSTR), with the dilution rate enhancement (0.05 - 0.3h-1), lactic acid production had decreased from 106±3 to 65.36±3 g/L, from 68±2.6 to 43.64±2.5 g/L and 36.34±2.2 to 27.12±2.0 g/L at initial molasses sugar concentration of 175, 100 and 50 gm/L respectively. During 2nd stage, at the low dilution rate (=0.05), an enhancement of approximately 10±2%, 8±1.5% & 5±1.5% in lactic acid production was observed at high initial sugar content of 175 g/L,100 g/L & 50 g/L respectively after 1st stage. Negligible/very low additional lactic acid production/sugar consumption was observed in the 2nd stage reactor (plug flow reactor) for dilution rate ≥0.1.

# Session 2

## Afternoon, November 24, 2017 (Friday)

## Time: 14:00~15:45

## Venue: 303-B09

## 7 presentations- Topic: "Food Processing and Chemical Engineering"

## Session Chair: Prof. Mohammed Mehdi Farid

N0022 Presentation 6 (15:15~15:30)

Mechanical harvesting of cherries and plums assigned for direct consumption

Dorota Konopacka, **Karolina Celejewska**, Monika Mieszczakowska-Frąc, Zbigniew Buler and Jacek Rabcewicz

Research Institute of Horticulture, Poland

*Abstract*—Although mechanical harvesting has the potential to reduce production costs, more research is required into harvesting dessert fruit. Therefore, a study was undertaken to assess the relationship between any fruit tissue destruction and changes in the bioactive components of fruits harvested then held in short term storage. The study focused on the quality of cherries and plums harvested using a combine machine equipped with working elements adapted to the geometry of the crown of the trees. Both mechanically harvested and hand-picked fruits were stored at 0, 8 and 18 ℃ for 5 and 10 days. For sweet cherries, the internal damage of the fruit appears to have no effect on the rate of quality changes during short-term storage. With plums, some changes in the texture of mechanically harvested fruits were noticed. However, in cold storage, they can maintain consumer quality for up to five days without significant changes in bioactivity.

# Session 2

## Afternoon, November 24, 2017 (Friday)

## Time: 14:00~15:45

## Venue: 303-B09

## 7 presentations- Topic: "Food Processing and Chemical Engineering"

## Session Chair: Prof. Mohammed Mehdi Farid

N0001 Presentation 7 (15:30~15:45)

Reaction Kinetic of Palmitic Acid Esterification with Glycerol to Monopalmitin Catalyzed by $SO_4$-$ZrO_2$ Supported on SBA-15

**Ahmad Zuhairi Abdullah** and Mohd Hizami Mohd Yusoff

School of Chemical Engineering, Universiti Sains Malaysia, 14300 Nibong Tebal, Penang, Malaysia

*Abstract*—The kinetic esterification of palmitic acid with glycerol in the presence of sulfated zirconia supported on SBA-15 was investigated. For comparison, SZSBA-15 catalyst having different pore diameter was also used to show the effect of pore aperture on the reaction rate. Typically, the reaction was carried out in the temperatures range of 160 – 180 oC, reaction time (30 – 180 min), a glycerol to palmitic acid molar ratio of 4 and a catalyst loading of 2.0 wt. %. The experimental results showed that the esterification of glycerol with palmitic acid using SZSBA-15 catalyst was an irreversible parallel reaction which follows a second order kinetic model. Compared to other published works, SZSBA-15 catalysts demonstrated much lower activation energy ranging from 38.2 to 43.1 kJ/mol. The predicted values of monopalmitin yield using the model are in good agreement with the experimental.

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| **Coffee Break & Group Photo Taking** | **15:45~16:05** |

# Session 3

**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, November 24, 2017 (Friday)

## Time: 16:05~18:05

## Venue: 303-B09

## 8 presentations- Topic: "Agricultural Science and Food Engineering"

## Session Chair: Assoc. Prof. Susan Bastian

N0014 Presentation 1 (16:05~16:20)

Milking Time and Amount of Milk Produced by the Habitual Use of Exogenous Oxytocin (OT) in Double Purpose Cows in Small-scale Farms in Mexico

**Guillermo Salas-Razo**, Esteban Cruz-Cruz, Rogelio Garcidueñas-Piña and Jesús A. Rojo-Martínez

Institute of Agriculture and Forestry Research, Universidad Michoacana de San Nicolas de Hidalgo, Tarimbaro, Michoacán, México

*Abstract*—The aim of this study was to evaluate during 30 days the milking time (duration of flow of milk/milking) and amount of milk produced with habitual use of exogenous oxytocin (OT) in double purpose cows in four small-scale farms (SSF) in Mexico. The habitual doses of OT used by farmers are 20.0 IU (SSF 1), 10.0 IU (SSF 2 and SSF 3) and 5.0 IU (SSF 4). For this study the OT administration was suspended in interspersed periods of 5 days. The time from OT administration to the beginning of milking was 162.0 ± 9.16, 186.61 ± 12.50, 360.21 ± 17.81 and 288.29 ± 9.94 seconds to SSF 1, SSF 2, SSF 3 and SSF 4 respectively; the milking time was higher when the cows received OT in SSF 1, SSF 2 and SSF 4 ($p<0.05$), in SSF 3 it was similar ($p=0.64$) with or without application of OT. The amount of milk (kg/day/cow) was increased when used OT in SSF 1, SSF 2 and SSF 4 ($p<0.05$); in SSF 3 not significant differences ($p>0.05$) were observed. In conclusion, the exogenous administration of OT increases the time of milking and the amount milk when is used properly.

# Session 3

## Afternoon, November 24, 2017 (Friday)

## Time: 16:05~18:05

## Venue: 303-B09

## 8 presentations- Topic: "Agricultural Science and Food Engineering"

## Session Chair: Assoc. Prof. Susan Bastian

N1003 Presentation 2 (16:20~16:35)

Environmental Impact of Pesticide Use: Teaching Its Effects and Regulations

**Ekaterina Svyatets**

University of Southern California (Los Angeles), USA

*Abstract*—This paper looks at the sustainability of conventional agriculture, with the emphasis on the impact of pesticides (insecticides and herbicides) on the environment, with the main focus on relatively new herbicides such as dicamba. The latest research by the United Nations has delivered new results on how pesticide application affects agricultural yields, as well as biodiversity and human health. A major concern about genetically modified organisms is that they may cause reduced genetic diversity of plants and animals in the environment. The paper also looks at the pesticide exposure and residues, comparing the existing policies in the United States and Europe. The United States sets tolerances, which are the maximum amount of a pesticide allowed to remain in or on a food, as part of the process of regulating pesticides. In other countries, tolerances are referred to maximum residue limits (MRLs).

# Session 3

## Afternoon, November 24, 2017 (Friday)

## Time: 16:05~18:05

## Venue: 303-B09

## 8 presentations- Topic: "Agricultural Science and Food Engineering"

## Session Chair: Assoc. Prof. Susan Bastian

E0005 Presentation 3 (16:35~16:50)

In vitro and in vivo study on the slow release of glucose in vacuum fried matrices

**Pedro Bouchon**, Ingrid Contardo and Bryony James

Pontificia Universidad Católica de Chile, Chile

*Abstract*—Starch gelatinization is a critical change that takes place during frying, which may be affected during vacuum processing. Under low-pressure operating conditions, the boiling point of water is reduced, precluding starch gelatinization due to liquid water limitations and may therefore slow-down starch digestion. In addition, structural changes in food microstructure are also induced, which may further limit the accessibility of amylolytic enzymes to reach its action site. This study assessed the effect of vacuum frying on starch gelatinization and its in vitro and in vivo digestibility, after feeding Sprague-Dawley rats. In addition, the link between starch digestibility and microstructural changes was studied in depth using X-ray microtomography an confocal laser scanning microscopy. Laminated dough was made of a reconstituted blend of wheat starch (88% d.b.) and gluten (12% d.b.). Samples were fried under vacuum (9.9 kPa, Twater-boiling-point=45oC) or atmospheric conditions up to bubble-end point, maintaining a thermal driving force of 70℃ (Toil−Twater-boiling-point=70℃). Results showed that vacuum-fried dough has a lower degree of gelatinization (~53.8%) and a maximal blood glucose level at 60 min (slower glycemic response) than atmospheric counterparts (~98.3% degree of gelatinization and maximal blood glucose level at 30 min). Similarly, in vitro procedures exhibited less rapidly available glucose and higher unavailable glucose fractions in vacuum-fried dough. Results from X-ray microtomography indicated that vacuum-fried samples had higher oil content (~54.48% dry basis) and less air porosity (~36.57% including only air filled pores) than their atmospheric counterparts (~19.66% dry basis oil content and 48.97% air porosity), and not significant differences were found between imaging techniques and conventional analytical methods. The microstructural characterization using confocal microscopy suggested that the bioaccessibility of starch during digestion can be further hindered in vacuum fried dough due to the high presence of oil within the starch-gluten matrix.

# Session 3

## Afternoon, November 24, 2017 (Friday)

## Time: 16:05~18:05

## Venue: 303-B09

## 8 presentations- Topic: "Agricultural Science and Food Engineering"

## Session Chair: Assoc. Prof. Susan Bastian

N1007 Presentation 4 (16:50~17:05)

Effect of Antioxidants on the Storage Stability of Freeze-Dried Lactic Acid Bacteria

**Shuto MIKAJIRI**, Kiyoshi KAWAI, Yoshio HAGURA, Dai SUZUKI, Tomoaki HAGIWARA, Takahiro KIKAWADA, Toru SUZUKI

Graduate School of Biosphere Science, Hiroshima University, 1-4-4 Kagamiyama, Higashi-Hiroshima, Hiroshima 739-8528 Japan

*Abstract*—Lactic acid bacteria (LAB) are widely used as starters for various food products (e.g., dairy products, LAB-based foods and pharmaceutical tablets) to provide some human health benefits. Some LAB, however, are destabilized and the number of survival cells decreases after dehydration and subsequent storage, and thus, stabilizing effects of various protectants have been investigated intensively. Some studies described that death of bacteria is attributed to membrane injury caused by phospholipid oxidation. This study, therefore, investigated effect of antioxidants (carnosine, cysteine, glutathione, and ascorbic acid) on the survival rate of freeze-dried LAB (*Lactobacillus reuteri* JCM 1112$^{T}$) after storage at 37 ℃ for 4 weeks. There was a large reduction of the survival rate in non-additive, glutathione, and ascorbic acid samples. Carnosine and cysteine, on the other hand, improved the survival rate. Carnosine showed the highest survival rate among the samples. This study revealed that carnosine had a significant stabilizing effect for freeze-dried LAB after storage at 37 ℃ for 4 weeks.

# Session 3

## Afternoon, November 24, 2017 (Friday)

## Time: 16:05~18:05

## Venue: 303-B09

## 8 presentations- Topic: "Agricultural Science and Food Engineering"

## Session Chair: Assoc. Prof. Susan Bastian

E0003 Presentation 5 (17:05~17:20)

Effect of Acupuncture Therapy in Combination with Nutrition Control on Body-weight Reduction in Postpartum Obesity Subjects

**Zhang Huimin**, Bai Kejiang(Common first author) and Jiang Chao

Department of Traditional Chinese Medicine and Nutrition, Beijing, China

*Abstract*—This paper aimed at designing and implementing an automated system that will alleviate the problem of handling patients' data in a hospital. The researchers were motivated to embark on this project because of the inherent problems of the manual system of hospitals file management. This manual system has so many problems associated with it such as insecurity of files, poor file retrieval system and inefficient file update system etc. This paper examines an existing information system of a hospital and designed an automated system that can help Medical Doctors and those who handle hospitals' data to perform their work more effectively and efficiently. The System would be developed with a Window, Apache, MySQL and PHP (WAMP) software. The HDBMS would be a web application that runs in a computer network. It would provide easy and fast access to stored data as needed by different users with security against unauthorized access. Any authorized user can add, delete and update data into the database base on their user-assigned-role. It would equally have the facility to give a unique identity for every persons and stores the details of every patient and the staff automatically. It includes a search facility to know the current status of each room in the hospital. A user can search availability of doctors and the details of a patient using the system. The interface is very user-friendly.

# Session 3

## Afternoon, November 24, 2017 (Friday)

## Time: 16:05~18:05

## Venue: 303-B09

## 8 presentations- Topic: "Agricultural Science and Food Engineering"

## Session Chair: Assoc. Prof. Susan Bastian

N0019 Presentation 6 (17:20~17:35)

Local food processing for value chain development: An experience from Jumla of Karnali region in Nepal

**Karishma Gurung**

ForestAction Nepal, Nepal

*Abstract*—The failure of value chain development of local food species to ensure quality and nutritional values are most important reasons to promote quality foods. There is need for re-establishing local food systems so that rural farmers get benefit from the farming for their livelihoods. The value chain development of the local food can be seen as an opportunity to revive local economy as well as small scale entrepreneurship.

This paper is based on the comparative studies of food grain harvesting, post-harvest processing; co-operations in product marketing and market innovations of value chain development activities on local foods carried out by farmers' cooperatives and private traders of Jumla of Karnali region of Nepal. This study suggests for the collaboration between cooperatives and individual traders in value chain development to promote local foods. For this state policies and institutions of value chain development are vital for the successful marketing of local foods.

# Session 3

## Afternoon, November 24, 2017 (Friday)

## Time: 16:05~18:05

## Venue: 303-B09

## 8 presentations- Topic: "Agricultural Science and Food Engineering"

## Session Chair: Assoc. Prof. Susan Bastian

E1004 Presentation 7 (17:35~17:50)

Measuring food related consumer perceptions – factors affecting on food choice

**Zsolt Polereczki**, Karoly Peto and Zoltan Szakaly

University of Debrecen, Faculty of Economics and Business, Debrecen, Hungary

*Abstract*—This study examines the applicability of the original 36 items FCQ model developed by Steptoe, Pollard and Wardle (1995) with the help of a national representative questionnaire involving 1050 individuals in Hungary in November 2015.
When analysing the data, answers to two main questions were sought: 1. Can the original FCQ be applied to this sample? 2. If the original model cannot be applied, how are the factors modified?
Our results indicate that the original 9 factor model is only partially applicable to Hungary. Our analysis successfully managed to distinguish the following factors: Health and Natural Content, Mood, Preparation Convenience, Price and Purchase Convenience, Sensory Appeal, Familiarity, and Ethical Concern. Using the factors 5 clusters were identified, the groups being the following: Mood & Preparation, Tradition oriented, Price & Sensory, Food enthusiasts, and Un-concerned.
Regarding the first and second questions (Can the original FCQ be applied to the sample? – If the original model is not applicable, how can the factors be modified?), conclusion was that the original FCQ model, with its 36 statements, cannot in its entirety be applied to the sample, although the differences experienced were minimal. Instead of the original 9 factors, 7 factors were identified in the sample. The study considered the reason for these differences to lie in cultural differences.

# Session 3

## Afternoon, November 24, 2017 (Friday)

## Time: 16:05~18:05

## Venue: 303-B09

## 8 presentations- Topic: "Agricultural Science and Food Engineering"

## Session Chair: Assoc. Prof. Susan Bastian

N0024 Presentation 8 (17:50~18:05)

Performance and Milk Anti-Oxidant Property of Dairy Goats Fed Pomegranate Seed Pulp and Soybean Oil

**Jongkolnee Yaowapaksophon**

Department of Animal Production Technology and Fisheries, Faculty of Agricultural Technology, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand

*Abstract*—The objective of this research was to investigate the effects of supplementing two feedstuffs, pomegranate seed pulp (PSP) as a source of plant secondary compounds or soybean oil (SO) as an energy source in order to enhance production performance and milk quality of Saanen dairy goats. Eight lactating cross-bred goats were assigned to receive diets in a replicated 4 ×4 Latin square design with 4 periods of 14 d adaptation and 7 d of data and sample collection. The four dietary treatments were unsupplement- ation (CON), supplementation with dried pomegranate seed pulp (PSP) at 120 g/kgDM, supplementation with soybean oil (SO) at 50 g/kgDM, and supplementation with SO at 50 g/kgDM and PSP at 120 g/kgDM (PSPSO), of concentrate diets. The dietary treatments with similar iso-nitrogenous (166 g/kgDM) and forage to concentrate ratio (36:64) were used. BW change, DM intake, protein intake, total tract apparent nutrient digestibility, milk yield, lactose, solid-not fat, total solid content and yield and solid-corrected yield of goats were not affected (P>0.05) by dietary treatments. Intake of PSPSO diet by PSPSO goats appeared to improve components and yields of milk fat, protein, 4%fat-corrected milk yield, milk efficiency (FCM/DM intake), responsibility of marginal FCM yield and milk flanoids (P=0.05). Somatic cell count of goat milk (520,000 cells/ml) was decreased (P<0.01) by the use of PSPSO diet. In conclusion use of combination between dried pomegranate seed pulp and soybean oil (PSPSO) of goat diet could increase milk protein content and yield, milk fat content and yield, fat corrected yield, fat quality and milk oxidative stability property.

# POSTER

## Afternoon, November 24, 2017 (Friday)

## Time: 8:50~18:05

## Venue: 303-B09

N2004 Presentation (8:50~18:05)

Pad development and its evaluation for food quality keeping during storage time

**Woon Kyu Lee**, Azra Memon, So Yeon Lee, Bae Yong Kim

Department of Biomedical Sciences, College of Medicine, Inha University, Incheon 22212, Republic of Korea

*Abstract*—Pass on fresh food to the consumer is very important as much as crop productivity. One of the main reason for the quality degradation for garden crop during its storage and delivery time is belongs to filamentous fungi. $SO_2$ gas has been known to be effect on the inhibition of cell membrane function as well as inactivation of proteins and mRNA of microorganisms. For this reason, $SO_2$ generating pad is one of the choice to keep the freshness for the crops. But, it is not only effectible to block the crop decay but also harmful to human health. This is why we develop functional pad for food storage and delivery using natural compound such as extracted one from pinecone. We will explain how it makes from the raw material to pad production as well as evaluate its functions for keeping freshness during storage time with strawberry and grape.
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# POSTER

## Afternoon, November 24, 2017 (Friday)

## Time: 8:50~18:05

## Venue: 303-B09

N4002 Presentation (8:50~18:05)

Stress Resistance from a Metabolic Point of View

**Deepti Harinder** and Venkatesh Karenahalli

Indian Institute of Technology Bombay (IITB), Powai, Mumbai-400076, Maharashtra, India

*Abstract*—Metabolic pathways play an important role in the cell's overall behavior. It is known that during stress, the cell modulates the expression of its metabolic genes. We aim to employ a systems biology approach to integrate the data obtained from genomic, transcriptomic and metabolic studies into a mathematical model which can simulate the biological processes taking place in a cell. A deinococcal regulator was introduced into Escherichia coli. This recombinant strain showed considerable acid stress tolerance as compared to the wild-type strain. These cultures were grown in a bioreactor under stress and non-stress conditions to estimate their growth parameters, the rate of secreted metabolites and substrate uptake. This data was used to simulate the overall flux distribution pattern through the central carbon metabolic pathway using the steady state gene expression simulator. Certain key metabolic nodes were identified that function differently in a stress resistant strain as compared to a stress-sensitive strain. Understanding the regulatory networks of key metabolic pathways that are differentially expressed in a resistant organism can be used to select novel potential targets for engineering of robust industrial strains.

# POSTER

## Afternoon, November 24, 2017 (Friday)

## Time: 8:50~18:05

## Venue: 303-B09

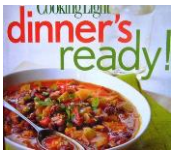
E0002 Presentation (8:50~18:05)

Ameliorative effect of a rarely occurring Compound on HMGB1-induced septic responses in vitro and in vivo

Wonhwa Lee, **Yuri Lee**, Sang-Hyun Kim, Moon-Chang Baek, Jong-Sup Bae

Kyungpook National University, Republic of Korea

*Abstract*—Storm surge models are vital nowadays because the recent destruction caused by hurricanes. In this study, we are profiling and evaluating explicit and implicit solvers, two popular methods used in storm surge predictions. Hurricane Katrina storm surge hindcast has been used in this simulation for both methods. We use analysis tools to examine both methods from various perspectives including: execution times, computational intensity, characterization of instructions, cache memory misses and others. Many experiments have been performed with various number of processors. We did not only present the differences between methods, but also we addressed the challenges associated with these methods.

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|---|---|
| **Dinner** | **18:10** |

# One Academic Visit

## November 25, 2017 (Saturday) 9:00~17:00

(Tip: Please arrive at The University of Auckland Science Centre before 9 a.m. The following places are for references, and the final schedule should be adjusted to the actual notice.)

1. **(9:00am) Assemble at The University of Auckland Science Centre**

2. **(9:00-12:00pm)Chemical and Materials Engineering Department University of Auck land Building 529, room 129A 2-6 Park Ave., Grafton, Auckland, New Zealand**

Chemical and materials engineering is a fascinating discipline involved in building and sustaining the world around us as well as designing new materials for the future.

3. **(12:00-14:00pm) Lunch time**

4. **(14:00-17:00pm)Visit Auckland Museum**

The most extensive Maori and Pacific Island Collection located within one of New Zealand's most iconic and outstanding heritage buildings.

The Auckland Museum War Memorial Museum is the cultural and spiritual touchstone for New Zealanders. In one of New Zealand's most outstanding historical buildings, boldly situated in the Domain - a central city pleasure garden - you encounter exhibitions that will excite you with the artistic legacy and cultures of the Pacific people. See the monumental carvings, buildings, canoes and taonga (treasures) of the Maori.

The Museum is the first stop for anyone wishing to gain an insight into New Zealand and its people. It includes priceless Maori treasures, amazing natural history, daily Maori cultural performances, and an ever-changing feast of local and international exhibitions.

# Conference Venue

## The University of Auckland

## Science Centre

Address: 38 Princes St, Auckland, 1010

The University of Auckland (Māori: Te Whare Wānanga o Tāmaki Makaurau) is the largest university in New Zealand, located in the country's largest city, Auckland. It is the highest-ranked university in the country, being ranked 81st worldwide in the 2016/17 QS World University Rankings. Established in 1883 as a constituent college of the University of New Zealand, the university is made up of eight faculties over six campuses. It has a head count of more than 40,000 students, and more than 30,000 equivalent full-time students.

Transport from the airport

Auckland International Airport is located approximately 40 minutes from the city centre. Three transport options are available at the airport terminal: Metered taxis will take travellers directly from the airport to the hotel. Fares vary depending on traffic, but generally the trip costs NZD 75-90 each way. Shuttle buses also offer door-to-door service. The trip may take more time than in a taxi, especially if there are several passengers. Fares are approximately NZD 35 per person each way. If your suitcase is light and you don't mind walking, you may wish to take the Airbus Express. Take Airbus Route #1 from the airport terminal to 25 Symonds Street (bus stop 7147) and walk 10 minutes to the hotel. Tickets cost NZD 16.

For more information, please visit the Auckland Airport website.
http://www.aucklandairport.co.nz/ToAndFromTheAirport.aspx

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# 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 | | | | | |

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|---|---|
| Are You A Member of HKCBEES | Yes □ No □<br>(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□<br>(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