# 2018 5th International Conference on Food Security and Nutrition (ICFSN 2018)

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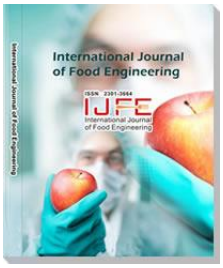
# 2018 HKCBEES Copenhagen Conference Introductions

Welcome to CBEES 2018 conference in Copenhagen, Denmark. The objective of the Copenhagen 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 Security and Nutrition.

**2018 5th International Conference on Food Security and Nutrition (ICFSN 2018)**

❄ **Paper publishing and index:** **ICFSN 2018** 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, Cross ref, ProQuest , CABI.

❄ **Conference website and email:** **http://www.icfsn.org/; icfsn@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 **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 oral presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on April 10, 2018.

## Dress code

Please wear formal clothes or national representative of clothing.

# Keynote Speaker Introductions

## Keynote Speaker I

Prof. Martin A.J. Parry
Lancaster Environment Centre, Lancaster University, Lancaster LA1 4YQ, UK

**Martin A.J. Parry** is a Professor of Plant Science for Food Security providing strategic leadership of research to facilitate the development of globally relevant and accessible food systems. With 9 billion mouths to feed by 2050, Martin wants his research to have a real impact on food security by increasing the yields of major crops whilst also increasing the efficiency of production and end use quality. Hisresearch both encompasses the exploitation of natural diversity and also the creation of new characteristics through biotechnology. He is currently involved in a number of international projects (e.g. http://ripe.illinois.edu/; http://iwyp.org/). His research is widely recognized; in 2014 he was presented with China National Friendship Award and in 2015 was made an honorary member of the Association of Applied Biology. Martin is the Editor-in-Chief of Food and Energy Security, Senior-Editor for the Journal of Integrative Plant Biology and Associate Editor for Plant Biotechnology Journal.

### Topic: “Improving crop yields”

Abstract: Whilst an adequate supply of food for the current global population could be achieved, sustaining this into the future will be challenging. A major pillar to achieving food security is to produce more food, but at the current rates of yield improvement for the major crops, the world will not achieve the projected additional 30% of primary foodstuffs demanded by 2030. The challenge for global agriculture is to grow more food on less land, using less resource (water, fertiliser, fungicides and pesticides) than ever before. A challenge made more difficult because climate change and increasingly variable weather events (e.g. rainfall patterns, heat waves and extreme low temperature events) are all expected to have major negative impacts on crop productivity. Thus, it is imperative to improve the resilience of yields to climate change and to minimize the yield gap, while developing integrated and sustainable approaches that will significantly increase crop resource use efficiency (per unit land area, water and fertilizer inputs). Our research is exploiting knowledge of the biochemistry, physiology and molecular genetics of key processes and using biotechnology to increase yield, yield resilience and also the efficiency with which other resources are used, in order to transform agriculture toward a more productive, sustainable future.

# Keynote Speaker II

Prof. Anders Permin
National Food Institute of Danmarks Tekniske Universitet, Copenhagen, Denmark

Educational background: MSc. in Veterinary Medicine (1990). The Royal Veterinary and Agricultural University, Denmark (KVL). PhD (1997) in Veterinary Microbiology KVL. Appointed Assistant Prof. (1997) with pedagogic exam (1998) Appointed Adjunct Associate Professor in April 2002. Diploma in management, coaching and project administration, (2004-2005). M-MBA (2012) Present employment: Chief Consultant, Innovation and Sector Development, DTU.
Previous: Deputy Director, National Food Institute, Danish Technical University.
Head of Department, Human Health and Safety, DHI covering areas related to toxicology and microbiology including disease control.

**Topic: "Safety and efficacy testing procedures for biotechnological compounds"**

Abstract: The use of ingredients in the industry and consumer products has increased over the last decade, but remains largely unrecognized by the public and medical professionals. Food, beverage, detergent, perfume, pharmaceutical, textile and chemical industries are increasingly using ingredients in the biotechnological processes for the synthesis of volatile and non-volatile chemical compounds contributing, among others, to the fragrance, taste and flavour of products. The desire of consumers for natural flavours in products and aroma in low-fat foods has driven the considerable growth in this sector to about US$10 billion over the last two decades. Though the conventional routes of chemical flavour synthesis are still used, the biotechnological generation of enzymes, especially of aroma compounds, is growing. New flavours have been produced by chemical transformation of natural substances, direct extraction from plants or by enzymatic/microbial/fungal biosynthesis. Whereas the first process does not legally allow the product to be labelled as 'natural', the synthesis of aromatic compounds in microbial/ fungal5 systems allows the product to be classified as 'natural' by the European and US legislations. A large variety of such enzymes are now on the market, mostly genetically modified with the help of recombinant DNA technology and expressed in different species increasing the numbers of proteins with potential sensitizing properties into thousands. However, there is still little current information on the possible safety effects in enzyme manufacturing or consumer exposure which may be oral, inhaled or cutaneous. The presentation will include an overview of the procedures for efficacy and safety testing of biotechnological products.

# Brief Schedule for Conference

| | |
|---|---|
| **Day 1** | **April 9, 2018 (Monday) 13:00~17:00**<br>**Venue: Outside of Konsistoriums Møderum**<br>**Bülowsvej 17, DK-1870 Frederiksberg C, Denmark**<br>Participants Onsite Registration & Conference Materials Collection |
| **Day 2** | **April 10, 2018 (Tuesday) 9:00~18:20**<br>**Venue: Konsistoriums Møderum**<br>Arrival Registration, Keynote Speeches, and Conference Presentations |
| | **Poster Session 9:00~18:20**<br>**Venue: Konsistoriums Møderum** |
| | **Morning Conference** |
| | **Venue: Konsistoriums Møderum**<br>**Opening Speech** 9:00~9:05<br>**Keynote Speech I** 9:05~9:50<br>(Prof. Martin A.J. Parry from Lancaster Environment Centre, Lancaster University, UK.<br>Topic: "Improving crop yields")<br>**Keynote Speech II** 9:50~10:35<br>(Prof. Anders Permin from National Food Institute of Danmarks Tekniske Universitet, Denmark.<br>Topic: "Safety and efficacy testing procedures for biotechnological compounds")<br>**Coffee Break & Photo Taking** 10:35~11:00<br>**Session 1** 11:00~12:15<br>5 presentations-Topic: "Food Science and Engineering" |
| | **Lunch** 12:15~13:30<br>**Venue: Konsistoriums Møderum** |
| | **Afternoon Conference** |
| | **Session 2:** 13:30~15:00<br>**Venue: Konsistoriums Møderum**<br>6 presentations-Topic: "Food Science and Engineering" |
| | **Coffee Break** 15:00~15:20 |
| | **Session 3:** 15:20~18:20<br>**Venue: Konsistoriums Møderum**<br>12 presentations-Topic: "Bioscience and Biotechnology" |
| | **Dinner**:18:30<br>**Venue: Restaurant** |

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

# Detailed Schedule for Conference

## April 9, 2018 (Monday)
## Venue: Outside of Konsistoriums Møderum
## Bülowsvej 17, DK-1870 Frederiksberg C, Denmark

| | |
|---|---|
| **13:00-17:00** | **Arrival and Registration** |

**Note: (1) The registration can also be done at any time during the conference.**
**(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.**
**(3) One best oral presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on April 10, 2018.**

## April 10, 2018 (Tuesday)
## Venue: Konsistoriums Møderum

| | |
|---|---|
| **9:00~9:05** | **Welcoming Speech**<br>Prof. Anna Haldrup<br>Department of Food Science, University of Copenhagen |
| **9:05~9:50** |  <br>**Keynote Speech I**<br>Prof. Martin A.J. Parry<br>Lancaster Environment Centre, Lancaster University, Lancaster LA1 4YQ, UK<br>Topic: "Improving crop yields" |
| **9:50~10:35** |  <br>**Keynote Speech II**<br>Prof. Anders Permin<br>National Food Institute of Danmarks Tekniske Universitet, Copenhagen, Denmark<br>Topic: "Safety and efficacy testing procedures for biotechnological compounds" |
| **10:35~11:00** | **Coffee Break & Photo Taking** |
| **11:00~12:15** | **Session 1**<br>Session Chair: Prof. Carlos Augusto Fernandes de Oliveira<br>Topic: "Food Science and Engineering" |
| **12:15~13:30** | **Lunch**<br>**Venue: Konsistoriums Møderum** |
| **13:30~15:00** | **Session 2**<br>Session Chair: Prof. Anders Permin<br>Topic: "Food Science and Engineering" |
| **15:00~15:20** | **Coffee Break** |
| **15:20~18:20** | **Session 3**<br>Session Chair: Prof. Martin A. J. Parry<br>Topic: "Bioscience and Biotechnology" |
| **18:30** | **Dinner** |

# Let's move to the Sessions!

# 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, April 10, 2018 (Tuesday)

## Time: 11:00~12:15

## Venue: Konsistoriums Møderum

## Session 1: 5 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Carlos Augusto Fernandes de Oliveira

**F0008-a Presentation 1 (11:00~11:15)**

Combined Effect of Ozonation and Ultrasonication on Rheological and Thermal Properties of Rice Starch in Aqueous Phase

**Şenol İbanoğlu,** Zeynep T. Özaslan and Esra İbanoğlu

Gaziantep University, Food Engineering Department, Turkey

*Abstract*- Ozone is considered as an alternative oxidant to the chemicals since it is able to oxidize at low temperatures without any problem of effluents. Ozone oxidation is sometimes regarded as a green technology since ozonation does not leave any hazardous residues in food products and it is quickly converted to atmospheric oxygen. Ultrasonication may change the structure of biomacromolecules by creating high temperatures, local shear forces and free radicals. Ultrasound technology is also regarded as environmentally friendly green technology in the food industry. The main idea behind this work was to see the combined effects of ozonation and ultrasonication on starch properties. Since the effects of ozonation and ultrasound processing have different effects on their own, it was aimed to examine what would happen when the two process are applied in series. Also, it would be useful to know whether the order of treatment has an effect on rice starch properties (i.e. ozonation followed by ultrasonication and ultrasonication followed by ozonation). The combination of two different processes would lead to starch samples with rheological and thermal properties which could be different from those obtained when processed by ozonation and ultrasonication only.

## Morning, April 10, 2018 (Tuesday)

## Time: 11:00~12:15

## Venue: Konsistoriums Møderum

## Session 1: 5 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Carlos Augusto Fernandes de Oliveira

**F0010-a Presentation 2 (11:15~11:30)**

Antioxidant activity and Oxidative stability of berry seed oils

**Esra İbanoğlu,** Eda Adal and Şenol İbanoğlu

Gaziantep University, Food Engineering Department, Turkey

*Abstract*- Berry seeds are an important by-product in the production of fruit juices and wines, but usually be discarded. Berries and cherries are sources of bioactive compounds such as polyphenols, anthocyanins and polyunsaturated fatty acids, especially essential fatty acids (with a favorable low n-6/n-3 ratio). These essential fatty acids cannot be synthesized in the human body and must be obtained from the diet. This study aimed to investigate fatty acid composition, antioxidant activity, total phenolic content (TPC) and oxidative stabilities of raspberry, blackberry and cherry seed oil. All tested oils contained significant levels of α-linolenic acid ranging from 5.34-31.37%, along with a low ratio of n-6/n-3 fatty acids (1.64-4.32). The highest TPC was observed in the red raspberry seed oils (2.62 mg gallic acid equivalents per gram oil). The antioxidant activity was assessed by diphenyl-1-picrylhydrazyl (DPPH). The results of TPC and DPPH were found to be highly correlated. IC 50 value of raspberry seed oils was found as 5.47 mg/ml. Oxidative stability of berry and cherry seed oils were assessed at five different isothermal temperatures (100, 110, 120, 130, 140℃) in a differential scanning calorimeter (DSC). The onset of oxidation time, T 0, was calculated from the intersection of extrapolated baseline and the tangent line of the peak in the DSC thermogram. The rates of oil oxidation were highly correlated with the rise in temperature ($p<0.05$). Reaction rate constants (k), activation energies (E a ) for the oxidative stability of berry seed oils were calculated based on Arrhenius equation. The E a , activation enthalpies ($\Delta H^{\ddagger}$), and activation entropies ($\Delta S^{\ddagger}$) for berry seed oils were ranged from 86 to 104 kj.mol -1 , 84 to 101 kj.mol -1, and from -15 to -66 J.K -1 .mol -1 , respectively. Based on results obtained, these oils may serve as good source of essential fatty acids and antioxidant compounds which have beneficial effects on human health. However, the low oxidative stability of oil samples requires careful packaging and storage.

## Morning, April 10, 2018 (Tuesday)

## Time: 11:00~12:15

## Venue: Konsistoriums Møderum

## Session 1: 5 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Carlos Augusto Fernandes de Oliveira

**F0011-a Presentation 3 (11:30~11:45)**

Can highly nutritious seed crops and legumes environmentally prosper in a nutrition transition from an animal-based towards a plant-based protein diet?

**Clara Larissa Wriessnegger**, Martina Krüger, Andreas Detzel and Mirjam Busch

Institut für Energie und Umweltforschung Heidelberg GmbH), Germany

*Abstract*- Protein supply is a key factor in food security, as 8 of 20 amino acids (AA) are essential for human growth and metabolism. Presently, the main sources of proteins for human consumption are animal-based products, followed by cereals. From an environmental point of view, eating less animal-based products is preferable, but from a diet point of view, such a preference is debatable. While animal protein sources are considered as complete proteins, vegetable sources often lack one or two essential AA. This is not necessarily true for legumes and highly nutritious seed crops, both of which the consumption (aside from soy) is almost negligible in Europe.
Living a healthy and sustainable lifestyle is becoming increasingly popular. Eating less meat was even determined to be a key trend within Europe in 2016. An element of this recent trend is the newborn diet pattern of flexitarians. This consumer group does not forego meat completely; rather, they substitute meat in some meals with meat-like products. Related expectations towards meat-like products are high, regarding protein content and taste, as well as mouthfeel and effort to prepare.

## Morning, April 10, 2018 (Tuesday)

## Time: 11:00~12:15

## Venue: Konsistoriums Møderum

## Session 1: 5 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Carlos Augusto Fernandes de Oliveira

**F0016 Presentation 4 (11:45~12:00)**

Effect of Carbonic Maceration Pre-treatment on Quality Characteristics of French Fries and a Numerical Approach for Prediction of Moisture and Temperature Distribution

**Sebahattin S. Turgut,** Muzeyyen M. Yanik, Erkan Karacabey, Erdogan Kucukoner

Department of Food Engineering, Faculty of Engineering, Suleyman Demirel University, Isparta, Turkey

*Abstract*- The effect of carbonic maceration (CM) pre-treatment on some quality characteristics of fried potato strips were evaluated and changes in the moisture and temperature distribution under the effect of CM treatment were figured out by a numerical approach. Parameters (temperature of 25-35 ℃, pressure of 1-2 bar and time of 7-14 hours) of CM treatment were examined in a full factorial experimental design. CM pre-treatment was found to be effective on shortening the frying time up to 30% and considerably limited oil absorption. Total colour change and alteration of a* value were inhibited to some extent with CM, and any negative change was observed with respect to b* value. On the other hand, CM treated samples had lower textural values (elasticity, firmness and skin strength) compared to those of control sample (with no pre-treatment). Finite difference method was used for numerical calculations. An explicit, capacitance method was employed. In order to verify predicted data, they were compared with the corresponding experimental results and good agreement was found between them.

## Morning, April 10, 2018 (Tuesday)

## Time: 11:00~12:15

## Venue: Konsistoriums Møderum

## Session 1: 5 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Carlos Augusto Fernandes de Oliveira

**F0018-a Presentation 5 (12:00~12:15)**

Phytochemical content and bioactive properties of wheat sprouts

**Jasna Canadanovic-Brunet**, Gordana Cetkovic, Jelena Vulic, Vesna Tumbas Saponjac, Sladjana Stajcic and Vanja Seregelj

University of Novi Sad, Faculty of Technology, Serbia

*Abstract*- Wheats contain high amount of nutrients such as dietary fiber, resistant starch, vitamins, minerals and microconstituents, which are building blocks of body tissues, but also help in prevention of diseases such as cardiovascular disease, cancer and diabetes. Sprouting enhances the nutritional value of whole wheat through biosynthesis of tocopherols, polyphenols and other valuable phytochemicals. Since the nutritional and sensory benefits of germination have been extensively documented, using of sprouted grains in food formulations is becoming a trend in healthy foods.

The present work addressed the possibility of using freeze-dried sprouted wheat powder, obtained from spelt wheat cv. 'Nirvana' (Triticum spelta L.) and winter wheat cv. 'Simonida' (Triticum aestivum L. ssp. vulgare var. lutescens), as a source of phytochemicals, to improve the functional status of the consumer. The polyphenolic compounds were identified and quantified using HPLC method. Total chlorophylls and carotenoids, and biological activities (antioxidant activity on ABTS radicals, reducing power and antiinflammatory activity) of sprouted wheat powders were assessed spectrophotometrically. The HPLC analysis showed that the most abundand compound was vanillic acid in both sprouted wheat powders, where sprouted winter wheat showed higher content (70.20 mg/100g). The content of carotenoids (22.84 mg β-carotene/100 g) and chlorophylls (131.23 mg/100 g), as well as antiinflammatory activity (EC50=3.70 mg/ml) was found to be higher in sprouted spelt wheat powder, while antioxidant activity on ABTS radicals (EC50=0.84 mmol TE/100 g) and reducing power (EC50=1.80 mmol TE/100 g) was found to be higher in sprouted winter wheat powders. Simulation of gastro-intestinal digestion of sprouted wheat powders clearly shows that intestinal digestion caused a higher release of polyphenols than gastric digestion for both samples, which indicates their higher bioavailability in colon. The results of current study have shown that wheat sprouts can provide a high content of phytochemicals and considerable bioactivities. Moreover, data reported show that they contain a unique pattern of bioactive molecules, which make these cereal sprouts attractive functional foods for a health-promoting diet.

# 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, April 10, 2018 (Tuesday)

## Time: 13:30~15:00

## Venue: Konsistoriums Møderum

## Session 2: 6 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Anders Permin

**F0020 Presentation 1 (13:30~13:45)**

Evaluating the impact of consumption of indigenous fruits and vegetables on rural food security: the case of Port St Johns area, South Africa.

**Samuel Ntlanga,** Amon Taruvinga and Abyssinia Mushunje

University of Fort Hare, South Africa

*Abstract*- Food insecurity is still prevailing at an alarming rate in rural areas of the entire continent in the presence of abundant indigenous fruits and vegetables. Yet the government policies addressing food security neglected the inclusion of the indigenous fruits and vegetables as one of the coping strategies. Despite that, indigenous fruits and vegetables are associated with multiple nutritional and health benefits. Unfortunately, the multiple benefits associated with indigenous fruits did not gain any popularity and further not taken into account as the possibly solution in addressing food and nutritional insecurity in rural areas. Thus, this study evaluates the impact of consumption of indigenous fruits and vegetables on food security in rural areas. Data analysis employed the semi parametric propensity score matching method to measure the impact of consumption of indigenous fruits and vegetables on rural food security on 340 (80 consumers and 240 non-consumers) selected rural households from the study area. The study shows that there was a significant improvement in food security from the consumers of indigenous fruits and vegetables than non-consumers. Several factors such as gender, age, level of education, household size, garden size, access to markets and access to credits were noted as drivers of indigenous fruits and vegetable consumption at household food level. A positive impact on household food security was revealed suggesting that consumption of indigenous fruits and vegetables may address rural household dietary diversity and food insecurity.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 13:30~15:00

## Venue: Konsistoriums Møderum

## Session 2: 6 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Anders Permin

**F0021 Presentation 2 (13:45~14:00)**

Determination of Physical Properties of Falafel (fried chickpea balls) Under the Effect of Different Cooking Techniques

**Mohammed M. Ismail,** Sebahattin S. Turgut, Erkan Karacabey and Erdogan Kucukoner

Suleyman Demirel University / Department of Food Engineering, Isparta, Turkey

*Abstract*- In this study, effect of different cooking techniques on some physical characteristics of falafel is evaluated. Falafel dough was prepared using a standard recipe and fried using microwave (MW), convection (5, 10 and 15 % of sun flower oil added to standard recipe) and traditionally deep frying techniques in sun flower oil at 180 ℃. Moisture content (db%), oil content (db%), textural properties (firmness; g-force and hardness; g-force), colour (L*, a*, b* and total colour change; ΔE) and cooking time (min) were determined and also one another critical quality parameter, namely volume increase (%), was calculated by image analyses for cooked falafel samples. The shortest frying time was found as 1 min for MW technique and it was increased up to 16.40 min with convective treatment. According to results, moisture content of samples ranged between 15.12±1.80-48.36±3.50% and the lowest result was belonged to falafels which initially containing 15% oil and cooked by convection, while the highest was found in deep fried samples. The lowest oil content (12.87±0.25%) was found in the sample that was cooked in a convective way with the addition of 5% oil. Among the different cooking techniques the lowest firmness (23.16±1.00) and hardness (18.72±2.08) were observed in deep fried samples. With regard to colour properties, any significant difference was not observed between MW and deep frying techniques for all parameters ($p<0.05$), however other samples differed from these two ($p>0.05$). And lastly, the lowest volume increase was observed in the MW cooked samples with 36.66±2.81% compared to uncooked falafel dough.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 13:30~15:00

## Venue: Konsistoriums Møderum

## Session 2: 6 presentations-Topic: “Food Science and Engineering”

## Session Chair: Prof. Anders Permin

**F0026 Presentation 3 (14:00~14:15)**

Extraction of Saffron Crocin as a Natural Pharmaceutical Source with Crystallization Method

**Sahebeh Sedaghati** and Fatemeh Abbaszadeh

Bahraman Saffron Company, R&D Department, Mashhad, Iran

*Abstract*- Separation of crocin as anti-cancer and antioxidant ingredient would be useful commercially and clinically. In this research with crystallization method, saffron Crocin was extracted. Ethanol 80% and acetone was chosen as the best extraction solvent. Crystallization and purification process was performed in two steps in zero and -5c ° degree. In first step, saffron Crocin was extracted with ethanol and after keeping in -5c ° for 23 days obtained Crystals were separated. Obtained Crocin crystals from the first step had low purity and the pure crystals were yielded during the second crystallization. Extraction and purity of Crocin. Crystals were studied by UV-visible spectrophotometry and Fourier transform spectrometry and High Performance Liquid Chromatogram analysis compared to Crocin Sigma-Aldrich. Results shows that the extraction intensity and purity of the obtained Crocins were significantly higher (28.32 times). Measurement of color showed the color strength was more than sigma-Aldrich about 7.5 time.

The results of this research showed that purchased Crocin according to the chromatograms is not pure and some unknown impurity were seen. Besides, Chromatogram spectra's shows that obtained Crocin crystals were in higher purity than purchased one.

This information illustrated that this crocin because of high purity can be used as a reliable and valid standard.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 13:30~15:00

## Venue: Konsistoriums Møderum

## Session 2: 6 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Anders Permin

**E3001 Presentation 4 (14:15~14:30)**

Characterization A Novel Antimicrobial Nano Composite Edible Film Based on Salvia Macrosiphon

**Azadeh Sadat Shekarabi,** Seyed Mohammad Davachi

Central Tehran Branch Azad University of Tehran, Iran

*Abstract*- This work aimed to develop a nano edible antimicrobial coating based on Salvia macrosiphon seed mucilage (SSM) and nanoclay, incorporated with glycerol to evaluate its physical properties. Upon addition of 2% nanoclay physical and mechanical properties were considerably improved and the composite films showed the lowest water vapor permeability (WVP), as well as highest elongation at break and tensile strength, which makes these films great alternatives for food packaging. While E. coli and S. aureus were significantly inhibited by this antimicrobial films. Results indicated that this novel antimicrobial edible film could have great potential for responsive packaging applications.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 13:30~15:00

## Venue: Konsistoriums Møderum

## Session 2: 6 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Anders Permin

**E0013-a Presentation 5 (14:30~14:45)**

Effects of Green Tea Contents on The Quality and Antioxidant Properties of Textured Vegetable Protein by Extrusion-Cooking

Xuelian Ma, **Gihyung Ryu**

Kongju Nationnal University/Food Science and Technology, Chungnam, Sourth Korea

*Abstract*- The aim of this study was to evaluate the effects of green tea contents (0, 5, 10, and 15%) on texturization and antioxidant properties of textured vegetable protein (TVP) by using a twin-screw extruder. Extrusion conditions were fixed at 140℃ barrel temperature, 50% moisture content, 100 g/min feed rate, and 200 rpm screw speed. The integrity index, hardness, and cutting strength of TVP significantly ($P<0.05$) increased with the increase in green tea levels, while cohesiveness, springiness, water holding capacity, and nitrogen solubility index (NSI) significantly ($P<0.05$) decreased. Increasing the amount of green tea resulted in better DPPH radical scavenging activity, higher total phenolic, total flavonoid, catechins, and caffeine contents. The (-)-epigallocatechin gallate, (-)-epicatechin, (-)-epigallocatechin, and (-)-epicatechin gallate contents of TVP significantly ($P<0.05$) decreased, compared to that of raw materials. The incorporation of green tea in TVP can negatively affect expansion and NSI while positively affect texturization and antioxidant properties.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 13:30~15:00

## Venue: Konsistoriums Møderum

## Session 2: 6 presentations-Topic: "Food Science and Engineering"

## Session Chair: Prof. Anders Permin

**F0019 Presentation 6 (14:45~15:00)**

Income and food security status among rural women Indigenous Knowledge (IK) based crafters and non-crafters: The case of Amathole District Municipality, South Africa

Sesetu Nyeleka, **Amon Taruvinga** and Leocadia Zhou

University of Fort Hare Faculty of Science and Agriculture, Alice, South Africa

*Abstract*- Improving household income and achieving household food security for women in rural areas is a key item on the agenda of both international and national governments across the globe. This is against a background where most rural women face several gender based constraints in accessing basic livelihoods. Against this background the paper assessed the income and food security status among rural women IK based crafters and non-crafters. The study was conducted in Amathole district municipality of South Africa using a cross sectional survey targeting 82 crafters and 122 non-crafters conveniently selected based on their willingness to participate. Quantitative and qualitative research methods were employed to generate data relating to research objectives and questions. The results indicate that income from selling IK based crafts contributed 29 percent of the total household income. With reference to food security the two groups did not show any significant difference. The paper therefore concludes that IK based crafts may address rural household income for women but falls short of addressing their household food security.

# 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, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**F0009 Presentation 1 (15:20~15:35)**

Development of a Hurdle System for Conservation of Freshwater Fish

**Christoph Hildebrand,** Andreas Müller-Belecke, Melanie Klein, Jessika Müller, Adam Erdoes

Institute of Agricultural and Urban Ecological Projects, Germany

*Abstract*- The degree of self-sufficiency of fish in Germany is extremely low by global standards. Accordingly, the consumption of domestic freshwater fish species in Germany is also very low. Depending on the region, leuciscinae species account for more than 50% of the total catch, which have no significance as food fish. Due to a lack of consumer acceptance, they can hardly be marketed in a classic form as fresh fish or as conventionally processed products. Considering the high nutritional and physiological value, this represents a less sustainable use of biological resources. Therefore new food products that combine processing of these species to gain a higher value within the production chain are urgently needed.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**F0028 Presentation 2 (15:35~15:50)**

Performance and Application of a "Dilute-and-Shoot" LC-MS/MS Method for Determination of Mycotoxins in Food Products in São Paulo, Brazil

Larissa T. Franco, Tânia Petta, Maria E. Vendrametto and **Carlos A.F. Oliveira**

University of São Paulo/Department of Food Engineering, Pirassununga, São Paulo, Brazil

*Abstract*- Mycotoxins are secondary metabolites produced by several species of fungi that occurs in agricultural commodities, which cause a great variety of toxic effects in vertebrates, including humans. In this study, a "dilute-and-shoot" method using ultra-performance liquid chromatography coupled to tandem mass spectrometry (LC-MS/MS) was evaluated and applied to assess the incidence of aflatoxins (AF) B1, B2, G1 and G2, fumonisins (FB) B1 and B2, ochratoxin A (OTA), zearalenone (ZEA) and deoxynivalenol (DON) in samples of corn meal (N = 4), corn flour (N=2), wheat flour (N=4), rice (N=14) and bean (N=12) collected in small-scale farms from São Paulo, Brazil. The performance parameters (aparent recovery, matrix effect, extraction recovery, linearity, limit of quantification and limit of detection) were satisfactory, and the most frequent mycotoxin detected in food samples was FB (7.11-316.04 μg/kg) below the Brazilian regulations. DON was detected in all samples of wheat flour (162.49-324.66 μg/kg) along with FB in 3 samples, and in one sample of bean (46.52 μg/kg). ZEA was detected in 2 samples of rice (4.90-6.78 μg/kg). Results indicated low incidences of mycotoxin in the products evaluated, although the co-occurrence of FB and DON warrants concern about their incidence in wheat flour in Brazil.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**F0015-a Presentation 3 (15:50~16:05)**

Multisector approach to tackling drivers of malnutrition in vulnerable communities: Experience from USAID - Feed the Future Nigeria Livelihoods Project

**E. A. Oluloto, A. A Oseni,** A. Kanoute

Catholics Relief Services, Plot 512, Cadastral Zone B09, Kado Estate, Behind NAF Center, FCT Abuja, Nigeria

*Abstract*- Most of Nigeria's households (HHs) are trapped in a vicious cycle of poverty and undernutrition. More than 100 million Nigerians live on less than US$1.25 per day and 40.6% of children under five suffer from chronic malnutrition. 1, 2 Both poverty and undernutrition are concentrated among rural HHs, with northwestern Nigeria most affected. And more than half of children under five in the region are stunted 1,2 Malnutrition is driven by food insecurity; poor maternal, infant and young child feeding practices; early and closely-spaced pregnancies; sub-optimal hygiene; and limited access to water and sanitation services resulting in negative consequences on children's health and nutrition.

In tackling the scourge of malnutrition, Catholic Relief Services (CRS) with support from USAID in 2013 launched the Feed the Future Nigeria Livelihoods Project in 28 vulnerable communities across Sokoto and Kebbi states, and the Federal Capital Territory (FCT). The project used a multisector and innovative approach to help 42,000 very poor households (HHs) grow their agriculture production, increase theirincomes, improve nutrition and hygiene, and provide social safety nets including conditional cash transfer.

The project promoted optimal Nutrition and WASH services focusing on the first 1000 days through a comprehensive behavior change communication package, capacity building, and services delivery. Some of the strategies include the use of key messages, training modules, local recipe guide, food preservation manual, sermon guides for religious leaders, caregivers' peer groups, male social forums, adolescent safe space and interpersonal counseling sessions using the caseworkers model. Others are commemoration of global campaigns, non-formal schools, community WASH committees, community-led total sanitation and WASH-friendly schools, in an integrated manner to stimulate sustainable behavior change in target populations. Sequel to these, the project recorded gains in improved knowledge, better attitude and adoption of best practices on nutrition and hygiene by the beneficiaries. The

findings from the 2017 project survey when compared to baseline survey in 2013 shows that the rates of exclusive breastfeeding for infants less than 6 months surged from 13 % to 90%; minimum acceptable diet for children aged 6-23 months increased from 13% to 44%; women dietary diversity scores increased from 3.8 to 5 out of 9. Also, 31% of households now store treated water in safe storage containers in contrast to the 6% recorded in 2013. Similarly, 55.1% of beneficiaries now know at least 3 out of 5 critical hand washing moments compared to 7% recorded in 2013. The result of 2017 World Bank impact evaluation shows that 95% of cash transfer households have moved up from extreme vulnerability along the path way to prosperity. These nutrition approaches were delivered through an innovative platform, the caseworker model, which works through social welfare workers, community volunteers and a care group model to achieve behavior change outcomes. The success of this multisector approach to improving nutrition was massive and demonstrates that food and nutrition security is better achieved when all sectors work in tandem. This issustainable and should be rolled out at scale.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: “Bioscience and Biotechnology”

## Session Chair: Prof. Martin A.J. Parry

**F0003-a Presentation 4 (16:05~16:20)**

Anthropometric Indicators Associated With Sleep Quality among University Students

**Hala Hazam Al Otaibi**

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

*Abstract*- The prevalence of overweight and obesity has become a major public health challenge among Saudi women. Epidemiological studies suggest that sleeping for less than seven hours/day is an important risk factor considered to prevent overweight and obesity. The aim of the study is to examine the association between sleep quality and anthropometric indicators as BMI, waist circumference and body fat percentage among female university students. A cross-sectional study recruited 233 female students at King Faisal University (KFU) in AL-Hasa, Saudi Arabia. The results indicated that poor sleep quality was common in students (54%) with mean total sleeping hours of five hours/day. Poor sleep quality was associated with overweight/obesity (OR 4.210, p=0.000), at risk waist circumference (OR 2.005, p=0.009), and moderate/high body fat percentage (OR 1.058, p=0.025). In conclusion, the present study found a significant association between short sleep quality and anthropometric indicators, that may help in obesity prevention programmers as sleep quality untraditional way.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**F0004 Presentation 5 (16:20~16:35)**

Development of a Novel Wound Dressing Coated with Drug-loaded Mesenchymal StemCells to Promote Wound Healing in Diabetics

**Albandari Bin-ammar,** Mark Slevin, Nessar Ahmed and Donghui Liu

School of Healthcare Sciences, Manchester Metropolitan University, Manchester, UK

*Abstract*- Diabetes mellitus (DM) is a metabolic disorder characterised by increased blood glucose concentrations resulting from a lack or partial deficiency of insulin, or insulin resistance. The prolonged hyperglycaemia of DM is extensively recognised as the causal link between diabetes and diabetic complications. Moreover, hyperglycaemia induces protein glycation and the formation of advanced glycation end-products (AGEs). The accumulation of AGEs in the body leads to structural and functional modifications of tissue proteins. The present study was conducted to evaluate the antiglycation activities of several inhibitors i.e. S-allyl cysteine (SAC), N-acetylcysteine (NAC) and compounds A, B and C (chemically synthesised small molecule inhibitors that mimic SAC/NAC) were identified as inhibiting the formation of Methylglyoxal (MG)-derived AGEs. The extent of glycation in the presence and absence of SAC, NAC and compound A were assessed by sodium dodecyl sulphate-polyacrylamide gel electrophoresis (SDS-PAGE). It has been established that SAC, NAC and compound A, are inhibitors of protein glycation.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**E0007 Presentation 6 (16:35~16:50)**

Human Gut Microbiome Analysis and Multi-omics Approach

**Tiziana Maria Sirangelo**

Department of Life Sciences, University of Modena and Reggio Emilia, Modena, Italy

*Abstract*- Given the importance of human gut microbioma in human health, its role has been recently reviewed and even now is the subject of many investigations. It is known that traditional culture methods are limited for analyzing it and that high-throughput sequencing, omics technologies instead allow to deepen the behaviour of microbial ecology. With the application of omics technologies, as metagenomics, metascriptomics, metaproteomics and metabolomics, many progress has been made in this field. Their integration, referred to as multi-omics approach, provides more evidence for biological mechanisms.
This review highlights that omics approaches can be powerful tools in analyzing the human gut microbiome. The current scenario and examples of recently published landmark work are discussed and some limitations are outlined. Their combination is analyzed and relevant studies allowing us to link the expression of disease-associated microbial functions to distinct taxa are treated.
Furthermore, recent system level approaches for integrating different omics layers are discussed and some researches aimed to develop a framework for the reconstruction of a large microbial community are examined. However, even today, we are aware that the multi-layer datasets integration is a challenging issue and that a careful planning of a multi-omics application is thus required.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**E0009-a Presentation 7 (16:50~17:05)**

Fabrication of A Pdms Thin Film as A Scaffold for the Growth of Cells

**Ayoung Choi**, Sung Ho Yook, and Do Hyun Kim

Korea Advanced Institute of Science and Technology, Republic of Korea

*Abstract*- One of the biocompatible polymers, which can be applied to human, is polydimethylsiloxane (PDMS) with biocompatibility, transparency and flexibility. Various kinds of cells can be cultivated on the PDMS polymer film as a scaffold. To apply the polymer film more easily to human body, thin film is preferable to reduce resistance to activity. The objective of this study is to fabricate a PDMS thin film to cultivate cells on it. The thickness of a PDMS film was controlled by diluting PDMS solution in hexane. The thickness of the film was controlled from 5 μm to 420nm by using excess hexane. In this study, a PDMS film was made hydrophilic by coating 3-chloropropyltriethoxysilane (CPTES) on the surface to cultivate cells. When HeLa cells and bovine satellite cells were cultivated on the CPTES-coated PDMS films, it was comparable to the control plate. This result demonstrates the suitability of the CPTES-coated PDMS film as a scaffold for the growth of diverse cells. Cultivated cells on the nano-scale thin PDMS surface is potentially applicable to medical applications such as artificial tissue and artificial skin.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: “Bioscience and Biotechnology”

## Session Chair: Prof. Martin A.J. Parry

**E0010-a Presentation 8 (17:05~17:20)**

Enhancement of Vertical Mixing in an Open Raceway Pond by Installing Internal Structures

**Jiyoun Lee**, Eunjin Kang, and Do Hyun Kim

Korea Advanced Institute of Science and Technology, Republic of Korea

*Abstract*- Microalgae has recently getting attention as an alternative energy source and mass production of microalgae is an important issue. Open raceway pond is a most widely used system for microalgae mass cultivation. Light is an essential element in the growth of microalgae. However, the deeper the medium, the weaker the light intensity because of light attenuation by water and microalgae. This limits the depth of the pond and the concentration of the cells in the culture fluid, leading to a decrease in productivity of the whole pond. To prevent this problem, vertical mixing should be promoted in an open raceway pond to better expose microalgae to light. In this study, internal structures were installed to improve vertical mixing in an open raceway pond and to expose more microalgae to sunlight. Numerical simulation of fluid flow was carried out for the flow in an open raceway pond with several sets of the installed internal structures by computational fluid dynamic (CFD) software, ANSYS CFX 18. Experimental validation by cultivation was carried out in a laboratory scale open raceway pond.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**E0018-a Presentation 9 (17:20~17:35)**

A Robust Microbial Cell Factory For Welan Gum Production

**Xiaoliu Liu**, Sha Li, Hong Xu

Nanjing Tech University, China

*Abstract*- Metabolic modifications were used to improve adaptability of the welan gum producing strain to industrial fermentation conditions. To protect Sphingomonas. sp against heat and acid stresses, five stress resistance elements from extremophiles were expressed in S. sp. NX-3，respectively. The tolerable temperature and pH reached 40 ℃ and pH4.0 by expressing global transcriptional regulatory factor IrrE. Then, IrrE was inserted into the phytoene synthase (crtB) gene region of the chromosome to obtain a carotenoid-free strain with high temperature and low pH resistance, named S. sp.-ΔcrtB-Irre. After incubated with 40 ℃ and nature pH in 7.5 L bioreactors, recombinant strain had obvious increases in biomass (7.05±0.25 g/L) and welan gum production (18.32±0.33 g/L) to the wild-type strain (2.27±0.20 g/L and 5.82±0.15 g/L). Furthermore, compared with the results of optimum condition, only a 2.3% reduction in biomass and a 3.7% reduction in welan gum production. Comparative transcriptomic analysis revealed that IrrE functioned as a switch to regulate different sets of genes, playing a global regulatory role in gene expression in S. sp, giving it industrial application potential to construction robust important industrial strains.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**E0019-a Presentation 10 (17:35~17:50)**

Direct Green Biotransformation to Rare Sugar: from Galactitol to D-tagatose

**Feng Sha**, Yucong Zheng, Jiao Chen, Fei Cao, Ming Yan and Pingkai Ouyang

Nanjing Tech University, China

*Abstract*- D-Tagatose is a kind of valuable rare sugar, and it attracts extensive attention for its low calorie as well as numerous health benefits. Current routes for D-tagatose production mainly relies on isomerization of D-galactose derived from the hydrolysis of lactose-containing materials. However, no matter chemical or enzymatic methods were inevitably limited by both low conversion and costly separation processes. Such problems can be eliminated in our two-oxidase coupled system, which comprises a specific polyol dehydrogenase and a water-forming NADH oxidase with galactitol as raw material. In this work, we combined bioinformatics and molecular modelling with functional constraints to guide our exploration for novel enzyme sources to perform the specific oxidation of the hydroxyl group at the C-2 position. And further work has demonstrated that D-tagatose can be produced with a complete conversion, a high yield (91%) and a remarkable productivity (160 g L-1 d-1), which considerably simplify the downstream processes. Moreover, this innovative, efficient and green approach could also be used for the preparation of other valuable functional sugars, typically, obtaining fructose from bio-oxidation of sorbitol, a bulk chemical from hydrogenation of glucose.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Mødesalen

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**E0020-a Presentation 11 (17:50~18:05)**

Novel Electrochemical Immune Sensor Based on Hep-Pga-Ppy Nanoparticles for Detection of A-Fetoprotein in Whole Blood

**Tingting Xu**, Chun Mao, Hong Xu

Nanjing Tech University, China

*Abstract*- A simple and accurate immune sensor for quantitative detection of α-Fetoprotein (AFP) was developed based on the immobilization of antigen on the surface of Hep-PGA-PPy nanoparticles modified glassy carbon electrodes (GCE). The obtained Hep-PGA-PPy nanoparticles were characterized by fourier transform infrared (FT-IR) spectra and transmission electron microscopy (TEM). And the blood compatibility of Hep-PGA-PPy nanoparticles was investigated by in vitro coagulation tests, hemolysis assay and whole blood adhesion tests. Combining the conductive property of polypyrrole (PPy) and the biocompatibility of heparin (Hep), the Hep-PGA-PPy nanoparticles could improve not only the anti-biofouling effect the electrode, but also improved the electrochemical properties of the immune sensor. Under optimal conditions, the proposed immune sensor could detect AFP in a linear range from 0.1 to 100 ng·mL-1 with a detection limit of 0.099 ng·mL-1 at the signal-to-noise ratio of 3, and it also possessed good reproducibility and storage stability. Furthermore, the detection of AFP in five human blood samples also showed satisfactory accuracy with low relative errors. Thus, the developed immune sensor which showed acceptable reproducibility, selectivity, stability and accuracy could be potentially used for the detection of whole blood samples directly.

## Afternoon, April 10, 2018 (Tuesday)

## Time: 15:20~18:20

## Venue: Konsistoriums Møderum

## Session 3: 12 presentations-Topic: "Bioscience and Biotechnology"

## Session Chair: Prof. Martin A.J. Parry

**E1002 Presentation 12 (18:05~18:20)**

Development of A Chemically Defined Fermentation Medium for the Production of A New Recombinant Fructosyltransferase

**Jan P. Burghardt,** Arne M. Oestreich, Tobias Weidner, Doreen Gerlach and Peter Czermak

University of Applied Sciences Mittelhessen, Germany

*Abstract*- The industrial-scale production of fructo-oligosaccharides from sucrose requires large quantities of the enzyme fructosyltransferase. An Aspergillus terreus fructosyltransferase was therefore expressed in Kluyveromyces lactis GG799 and secreted into the medium. K. lactis was cultivated in shaking flasks at 30 ℃ and 250 rpm using either rich or chemically defined fermentation media. In order to limit the accumulation of unwanted side products that tend to form in rich media such as yeast extract peptone dextrose, a chemically defined FM22 medium was optimized in a two stages, focusing on biomass accumulation and enzyme production, respectively. A design-of-experiments strategy was used to screen for essential vitamins. A two-level fractional factorial design revealed that only biotin, nicotinic acid, pyridoxine and D-pantothenic acid were necessary for biomass accumulation, and an additional D-optimal design was used to optimize the concentration of inorganic salts (MgSO4, (NH4)2SO4, CaSO4, FeSO4 and KH2PO4) and the fermentation temperature. For enzyme production, the integrated LAC4 promoter was induced with galactose, which was provided in addition to glucose as the carbon source in the adapted FM22 medium.

| Dinner | |
|---|---|
| **18:30** | **Restaurant** |

# Poster Session

**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.**

## April 10, 2018 (Tuesday)

## Time: 9:00~18:20

## Venue: Konsistoriums Møderum

**E0012-a Presentation**

Effects of Process Variables and Die Configuration on Physical Properties of Extruded Soy Protein Isolate

**Bon-Yeob Gu,** Gi-Hyung Ryu

Kongju National University, Yesan, Republic of Korea

*Abstract*- The objective of this study was to determine the effect of moisture content (45, 50, 55%), barrel temperature (140, 150℃), screw speed (150, 250 rpm) and two die configurations on the physical properties of extruded soy protein isolate (SPI). Water holding capacity (WHC), texture, integrity index and nitrogen solubility index (NSI) of extruded SPI were analyzed. The texture of extruded SPI was affected by the die configuration. The physical properties of extruded SPI was significantly influenced by barrel temperature, moisture content and die configuration. The increase in water injection rate and barrel temperature led to increase WHC and NSI. The higher water injection rate led to increase integrity index and texture (elasticity, cohesiveness, chewiness, cutting strength). The extruded SPI at 8 cm die configuration had higher integrity index than those of the 5 cm die configuration. Integrity index and NSI were negatively correlated. Thus, the die configuration can be useful to control quality of extruded SPI.

## April 10, 2018 (Tuesday)

## Time: 9:00~18:20

## Venue: Konsistoriums Møderum

**E0011-a Presentation**

Effects of Temperature and Moisture Content on Physicochemical Properties of Extruded Texturized Vegetable Protein with Mealworm

**Sunyoung Cho**, Gihyung Ryu

Kongju Nationnal University/Food Science and Technology, Chungnam, South Korea

*Abstract*- The effects of die temperature (140℃ and 150℃) and moisture content (40% and 50%) on physicochemical properties of extruded texturized vegetable protein with mealworm (0% and 15%, 30%) were studied. As addition of mealworm increased and die temperature increased, breaking strength and density, integrity index decreased, specific length, expansion and water holding capacity increased, The nitrogen solubility index and protein digestibility increased as addition of mealworm increased and die temperature decreased. DPPH radical scavenging activity significantly increased as addition of mealworm increased and die temperature increased. On the contrary, the value of rancidity decreased as addition of mealworm increased even in 60 days. In conclusion, addition of mealworm became softer texture, and protein quality of the extruded texturized vegetable protein. The process promoting functionality such as improvement of antioxidant function was confirmed through this study. Also, adjusting extrusion process variable resulted in increasing expansion and antioxidation.

## List of Listeners

| Name | Affiliation |
|---|---|
| Muhammad Siddique | Cofoco Airport Solutions ApS, Denmark |
| Mihwan Kim | Kongju National University, Korea |

# Half Day Visit and Tour

**April 11, 2018**
**9:30---17:00**

## 9:30—11:30 Visiting the Department of Food Science, University of Copenhagen

## 11:30—13:30 Having lunch

## 13:30—17:00 City sighting in Copenhagen

| | |
|---|---|
|  | **Rådhuspladsen** is the Danish Architectural Press and the Royal Danish Academy of Fine Arts. |
|  | **Frederiks Kirke** is the famous and biggest aeruginosa round headed church in Denmark. It is near the Amalienborg Slot. It is also called “Marble Church”, because it is made of vast marble from Denmark and Norway. |
|  | **Gefion Fountain** is located in the 500 meters north of the Amelinburg Palace, has a statue of the goddess Jifeiang flogging the bull. Jifeiang rode four copper cows to pull the plow, various shapes, lifelike. |
|  | **Amalienborg Slot** is the main house for royal of Denmark. Is built in the middle of the eighteenth century, the Amelinburg Palace is located in the eastern part of the city of Copenhagen. The palace is located around the square of the eight corners and consists of four exactly the same palaces. |
|  | **The Little Mermaid** the statue, which is based on Andersen's fairy tale "The Daughter of the Sea", has almost become a symbol of Denmark, The bronze statue, about 1.5 meters high and 1.8 meters in diameter, was made by Aidehua airuikesen, a Danish sculptor, based on Andersen's fairy tale The Daughter of the Sea. Airuikesen made this bronze mermaid with his wife as a model. |

# Conference Venue

Address: Bülowsvej 17, DK-1870 Frederiksberg C, Denmark



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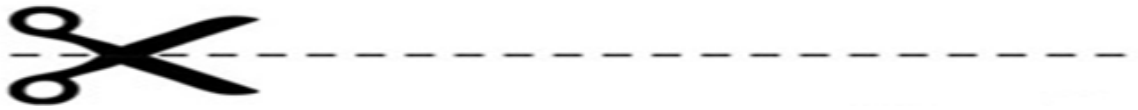

# Feedback Information

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| | Very Satisfied | Somewhat Satisfied | Neutral | Somewhat Dissatisfied | Very Dissatisfied |
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| 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!