2019 6th International Conference on Food Security and Nutrition (ICFSN 2019)

April 8-10, 2019

Barcelona, Spain

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Conference Venue

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Barcelona Conference Introductions

Welcome to 2019 Barcelona conference. This conference is organized by HKCBEES. The objective of the Barcelona conference is aimed to bring together leading scientists, researchers around the world to discuss the priority topics for Food Security and Nutrition in recent years

2019 6th International Conference on Food Security and Nutrition (ICFSN 2019)

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: <u>http://www.icfsn.org/; icfsn@cbees.net</u>

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 **30** Minutes of Presentation and **5** Minutes of Question and Answer Invited 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 April 9th, 2019.

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 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: 'Helping to achieve food security by harnessing the suns energy more efficiently '

Abstract—To achieve food security, consistent increases in the global population demand parallel increases in global food production. With stagnating yields of our major crops there is an urgent need to develop integrated and sustainable approaches that will significantly increase both crop production per unit land area and resource use efficiency. Photosynthesis is the primary determinant of biomass with more than 90% of biomass derived directly from photosynthetic products. There is irrefutable evidence from free-air CO2 enrichment (FACE) that increasing photosynthesis does indeed increase crop yields, provided that other constraints do not become limiting. The efficiency with which the sun's energy can be captured as wheat biomass seldom exceeds 2% and averages less than 1%; improving this conversion efficiency is widely recognized as the new frontier for crop improvement. Our research has focused on overcoming the limitations of the CO2-fixing enzyme Rubisco, the only enzyme capable of net CO2 fixation in all plants, either through mining natural diversity or by genetic engineering. Importantly, even small increases in the rate of net photosynthesis can translate into large increases in biomass, and hence yield. We are both attempting to exploit natural diversity and also adopting a candidate gene/ synthetic biology approach lied to alleviate metabolic constraints.

Keynote Speaker II



Prof. Raquel de Pinho Ferreira Guin é Polytechnic Institute of Viseu, Portugal

Raquel P. F. Guin éis a Coordinating Professor with habilitation in Food Science, Head of the Food Industry Department, Agrarian School of Polytechnic Institute of Viseu - IPV (Portugal).

Career: University Teacher since 1994, has been President of the Scientific Board; President of the Assembly of Representatives; Director of Licence Course in Food Engineering; Director of MsC Course in Food Quality and Technology; Director of Research Groups at Research Centres: CI&DETS and CERNAS.

Studies: License degree in Chemical Engineering (1991), MsC in Engineering Science (1997), PhD in Chemical Engineering (2005), all at the Faculty of Science and Technology of the University of Coimbra (Portugal). Teaching Habilitation in Food Science (2015) from the University of Algarve (Portugal). Certificate of Proficiency in English (CPE, 1986) by the University of Cambridge (United Kingdom).

Scientific achievements: Author/co-author of about 20 books, 50 chapters, 200 research papers and 250 conference proceedings. Has authored about 160 oral communications and 120 posters presented at scientific conferences. [Scopus ID: 6603138390; H-index 17, 856 citations)] [Research Gate Profile: https://www.researchgate.net/profile/Raquel_Guine]

Global leader of a team of 76 researchers working under the International Project "EATMOT" involving 18 countries: Argentina, Brazil, Croatia, Cyprus, Egypt, Greece, Hungary, Italy, Latvia, Lithuania, Macedonia, Netherlands, Poland, Portugal, Serbia, Slovenia, Romania and United States of America [website of the project: https://raquelguine.wixsite.com/eatmot]

Large experience in supervision of Master thesis (30 finished, 4 in progress). Organization of 20 conferences/meetings and Scientific Board for 34 conferences. [More details at webpage: raquelguine@esav.ipv.pt].

Topic: 'The Science Behind Traditional Products: The Case of Portuguese Cheeses'

Abstract—Portugal is situated in the Iberian Peninsula, having climacteric influences of the Atlantic Ocean together with the Mediterranean Sea, which, allied to the landscape and fertile soil results in good pastures that potentiate the animal production. Hence, Portugal is very rich in what concerns traditional cheeses, made with cow, goat, sheep or mixture milks, and which are characterized by very particular tastes, colours and consistencies, besides being also different in terms of chemical composition.

The number of Portuguese traditional cheeses is very high, although only a part of them have already been registered under the European Union designations for protection of origin. These have different processing technologies and are characterized by singular aspects that differentiate among them. In this way, they can be classified in terms of the type of milk used for its production, or in terms of the fat content, or even the type and intensity of ripening or finally according to the consistency of the paste.

Traditional cheeses are very important in social terms, because they accumulate the history of a people and a country, besides providing a means of income for the rural populations that live from the pastures and the cheese manufacture.

Cheeses comprise nutritional properties for being a good source of proteins, lipids, minerals (such as calcium, phosphorus and zinc) and vitamins (like vitamin A, riboflavin, folic acid and vitamin B12). Nevertheless, when it comes to traditional cheeses, they have to be consumed with moderation due to the high fat content present because they are usually made with whole milk.



Coffee Break & Group Photo Taking

10:15~10:45

Keynote Speaker III



Prof. Jose Luis Araus Ortega University of Barcelona, Barcelona, Spain

Full Professor of Plant Physiology, at the University of Barcelona (1993) and Professor ICREA Academia (in 2013 and 2018). Research stages at the University of Georgia (US), the International Center for Agricultural Research in the Dry Areas (Syria), the International Center for Biosaline Agriculture (UAE), the Smithsonian Tropical Research Institute (Panama), the International Maize and Wheat Improvement Center (CIMMYT, Mexico), etc. He was National Seconded Expert at the Directorate General for Research of the EU (Brussels), Principal Scientist at the Global Maize CIMMYT and currently coordinator for Agriculture, Research Evaluation Agency of the Andalusian Government (Spain). He is and has been PI of several international projects and co-author on near 250 publications in SCI and SSCI Journals, with h-index (Google Scholar) of 69, and recipient (2008) of the Friendship Award (China). Responsibilities in international and national research evaluation agencies.

Topic: 'High throughput phenotyping and genetic gain in cereals'

Abstract—Current and expected future relative rates of progress in yield potential and abiotic stress adaption in wheat are a matter of real concern and are insufficient to meet the projected demand for cereals by 2050. High throughput plant phenotyping (HTPP) is considered as one of the current bottlenecks limiting the efficiency of the breeding process. In order to apply HTPP in an efficient way it is important to define what traits may be most relevant to select for. One of the approaches to determine these traits is a purely empirical one, consisting in identifying, through retrospective studies where cultivars released during past years are grown together, what morphophysiological traits have been involved in the genetic gain. Through this approach the importance of traits such as high stomatal conductance, stay green, phenological adjustment or even early ground cover has been highlighted for cereals and other crops. Importantly different HTPP approaches for these traits already exist. However, in the case of wheat and other small grain cereals the observed multiyear tendency for growth in yield is decreasing or even in some cases has stagnated in recent years. There are three specific major challenges: increasing yield potential, protecting yield potential from stresses, and increasing resource use efficiency to ensure sustainability. The need to speed genetic advance, bridging conventional breeding with the vast panoply of molecular breeding techniques, will require a wider implication of HTTP. In that context some examples of potential avenues are presented.

Invited Speaker I



Prof. Carlos A. F. Oliveira University of S ão Paulo, Brazil

Prof. Carlos Augusto Fernandes de Oliveira graduated in Veterinary Medicine in 1983, and received his Master's (1991) and PhD (1994) in Public Health at the University of S ão Paulo (USP). Since 2009, he is Full Professor at the Department of Food Engineering, School of Animal Science and Food Engineering of USP. Dr. Carlos Oliveira was the Head of Department of Food Engineering (2007-2011), and currently he is the leader of the research working group registered at the National Council for Research Development (CNPq/Brazil) in the area of Milk Quality and Mycotoxins in Food Products. He participates as Editorial Board member in Toxicology Reports (Elsevier) and Current Research in Nutrition and Food Science (Enviro), also serving as reviewer for more than 30 international journals. Prof. Carlos Oliveira has published 196 articles in referred journals with 1,812 citations and 31 chapters in 15 books, having the h-index of 26.

The research interest of Professor Carlos Oliveira focuses on toxins produced by molds (mycotoxins), including their residues in animal products, the assessment of mycotoxin exposure in the human diet using biomarkers, animal toxicity trials and decontamination approaches. Studies on detection, biofilm formation, molecular identification and prevention of pathogenic microorganisms in milk and dairy products are also developed, as well as potential applications of probiotics in dairy products.

Topic: 'Exposure Assessment of Mycotoxins in Foods: Classical and Biomonitoring Approaches'

Abstract—Mycotoxins are secondary metabolites produced by fungi that develop naturally in food products, which can cause a great variety of toxic effects in vertebrates, including men. Exposure to toxins occurs predominantly by the ingestion of contaminated food, especially cereals and grains, such as corn, wheat, and peanut, among others. The main mycotoxins occurring in foods and regulated worldwide are the aflatoxins (AFs), fumonisins (FBs), ochratoxin A (OTA), zearalenone (ZEN), deoxynivalenol (DON) and patulin (PAT). One of the most important aspects in risk analysis of chemical substances is to determine the degree of human exposure, a particularly difficult task for contaminants present in foodstuffs, like mycotoxins. Since the aflatoxin discovery in the early 1960s', exposure estimates have been traditionally based on data on consumption of contaminated foodstuffs, and on the average occurrence of the toxin. These classical approaches provide useful data, although not always ideal due to the heterogeneous distribution of mycotoxins in foods and to the limited accuracy of food consumption data. These caveats may be overcome with the measurement of exposure biomarkers of mycotoxins in clinical samples such as serum and urine, since biomarker excretion correlates well with the intake of some mycotoxins. A biomarker of exposure refers to the quantification of the specific compound, its metabolite(s) or interaction products in a body compartment or fluid, which indicates the presence and magnitude of exposure to the agent. For example, serum AFB₁-lysine, a digest product of AFB₁-albumin has been extensively used for human biomonitoring of aflatoxin exposure, and tested as a marker of aflatoxicosis in broilers and piglets. Urinary biomarkers suitable for dietary exposure to AFB₁ and ZEN are AFM₁, AFP₁ and AFQ₁, and non-metabolized ZEN + α -zearalenol (α -ZEL) + β -zearalenol (β -ZEL), respectively. Non-metabolized FB₁, OTA and DON + de-epoxideoxynivalenol 1 (DOM-1) + 15-acetyl-DON (15-Ac-DON) are urinary biomarkers for FB1, OTA and DON, respectively. In recent years, the liquid chromatography tandem mass spectrometry (LC-MS/MS) based on the multi-analyte approach has been successfully introduced into the field of mycotoxin analysis, including the evaluation of suitable biomarkers for assessment of human exposure to mycotoxins. Thus, biomonitoring of multiple biomarkers in urine opens new perspectives for the assessment of dietary exposure to co-occurring mycotoxins in human populations, and for the evaluation of the protective effects of regulations for mycotoxins in food commodities. However, further toxicokinetic studies are needed to provide data on absorption, distribution, metabolization and excretion in humans considering possible mycotoxin mixtures in the diet.

Acknowledgements: This work was supported by CNPq (Grant no. 400649/2014-4).

Brief Schedule for Conference

	April 8, 2019 (Monday) 10:00~17:00			
Dav 1	Venue: lobby of K+K Hotels			
č	Add: (Passeig de Picasso, 26, 30, 08003 Barcelona, Spain)			
	Participants Unsite Registration & Conference Materials Collection			
	April 9. 2019 (Tuesday) 8:40~17:30			
	Arrival Registration, Keynote Speech, Conference Presentation			
	Morning Conference			
	Opening Demonics			
	Prof. Jose Luis Araus Ortega			
	University of Barcelona, Barcelona, Spain			
	Kevnote Speech I 8:45~09:20			
	Topic: 'Helping to achieve food security by harnessing the suns energy more efficiently'			
	(Prof. Martin A.J. Parry, Lancaster Environment Centre, Lancaster University, Lancaster LA1 4YQ,			
	UK)			
	Keynote Speech II 9:20~09:55			
	Topic: 'The Science Behind Traditional Products: The Case of Portuguese Cheeses'			
	(Prof. Raquel de Pinho Ferreira Guin é, Polytechnic Institute of Viseu, Portugal)			
Day 2	Coffee Break & Group Photo Taking 09:55~10:10			
	Keynote Speech III 10:10~10:45			
	Topic: 'High throughput phenotyping and genetic gain in cereals'			
	(Prof. Jose Luis Araus Ortega, University of Barcelona, Barcelona, Spain)			
	Session 1:10:45~12:15 Venue: Tapies meeting room			
	6 presentations-Topic: "Food Economics and Food Safety Management"			
	Session Chair: Prof. Martin A.J. Parry			
	Lunch 12:15~13:30			
	Venue: Restaurant in K+K Hotels			
	Afternoon Conference			
	Venue: Taples meeting room & Miro meeting room			
	Invited Speech 13:30~13:55			
	Topic: 'Exposure Assessment of Mycotoxins in Foods: Classical and Biomonitoring			
	Approaches ⁷ (Prof. Carlos A. F. Oliveira, University of S ão Paulo, Brazil)			

	Session 2:13:55~15:25 V 6 presentations-Topic: "Fo Session Chair: Prof. J	enue: Tapies meeting room ood Nutrition and Health" ose Luis Araus Ortega	
	Coffee Break & Group Pl	noto Taking 15:25~15:40	
	Session 3:15:40~17:40	Session 4: 15:40~17:40	
	Venue: Tapies meeting room	Venue: Miro meeting room	
	8 presentations-Topic: "Food	8 presentations-Topic: "Food	
	Processing and Quality Analysis"	Microbiology and Biotechnology"	
	Session Chair: Prof. Raquel de Pinho	Session Chair: Prof. Carlos A. F.	
	Ferreira Guin é	Oliveira	
	Poster session:08:40~17:40		
	Dinner Venue: Restaura	• 18:00 nt in K+K Hotels	
Day 3	April 10, 2019 (Wednesday) 09:30~17:00 One Day Visit		

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

Note: (1) The registration can also be done at any time during the conference.

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

(3) One Best Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on April 9th, 2019.

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 9, 2019 (Tuesday)

Time: 10:45~12:15

Venue: Tapies meeting room

6 presentations-Topic: "Food Economics and Food Safety Management"

Session Chair: Prof. Martin A.J. Parry

K4016 A Presentation 1 (10:45~11:00) Antioxidant Properties of Strawberry Vinegar Ç. Gokirmakli, **N. H. Budak**, Z. B. Guzel-Seydim, A. C. Seydim, B. E. Filiz, I. D. Karakulak Isparta University of Applied Sciences, Isparta, Turkey

Abstract- Consumption of the strawberry is not only a healthy choice but also enjoyable for most of the people. It is one of the most popular and well-known fruits around the world. It is used to produce pastry products and jam. However, its utilization as vinegar is not a common application. The purpose of this study was to determine chemical properties of strawberry vinegar including antioxidant capacity. For this purpose, total acidity, pH, dry matter content and antioxidant capacity tests such as TEAC, ORAC and total phenolic contents, phenolic compounds and organic acid content analyses were carried out. The pH, total acidity and dry matter contents for strawberry vinegar were 3.57±0.0, 4.59±0.1 and 2.06±0.11, respectively. The TEAC and ORAC values for the vinegar were 6,26 mM TE/g sample, 1.67µmol/ml, respectively. The results of the study indicated that antioxidant properties of strawberry decreased during vinegar fermentation. Also, strawberry vinegar has a "mild" antioxidant activity level when compared with other types of vinegar.

Morning, April 9, 2019 (Tuesday)

Time: 10:45~12:15

Venue: Tapies meeting room

6 presentations-Topic: "Food Economics and Food Safety Management"

Session Chair: Prof. Martin A.J. Parry

K1011 A Presentation 2 (11:00~11:15) Attitudes to and Consumption of Fortified Food Products in Uttar Pradesh and Bangladesh Sunny Sharma, **James Bell**, Sophie Bates, Alice Robinson Ipsos MORI, London, UK

Abstract- The public health nutrition community is increasingly turning towards food fortification as a viable intervention to improve population health in developing countries (WHO 2006). Whereas data are available on various aspects of food fortification, including the impact on health and safety considerations during the production process (Honein 2001, Nnorom, Osibanjo, Ogugua 2007) relatively little is known about the attitudes and behaviors of the end consumers, which hampers progress in this area. The Base of the Pyramid Study, funded by the Bill and Melinda Gates Foundation and conducted by Ipsos MORI aimed to build evidence on end users' awareness of, attitudes to and consumption of fortified products. The study ran between 2015 and 2018 and comprised two waves of data collection, based on representative sampling, in Nigeria, Uttar Pradesh (India) and Bangladesh. Data were collected on attitudes to fortified products, awareness of consumption and reasons for consumption. Using Bangladesh and India as case studies, the findings showed that approximately half of respondents reported consuming fortified food in the last year, with the main reasons being because they perceive the product as healthier. Levels of trust in fortified food were shown to be high, but use of fortified products was not reported to increase during pregnancy. Although there were some limitations in study design, including the question of how to explain food fortification succinctly to populations who have low knowledge of it, the findings are important in that they contribute to a better understanding of how people in these countries think about fortified food, so that targeting and marketing efforts can be refined and improved.

Morning, April 9, 2019 (Tuesday)

Time: 10:45~12:15

Venue: Tapies meeting room

6 presentations-Topic: "Food Economics and Food Safety Management"

Session Chair: Prof. Martin A.J. Parry

K2046 A Presentation 3 (11:15~11:30) Healthier choices: can nudging be used to improve the consumption of bitter vegetables? **Cicia GIANNI**, Cavallo C., Del Giudice T., Vecchio R. University of Naples Federico II, Naples, Italy

Abstract- A diet rich in antioxidants has been considered as capable of preventing most of diet-related diseases. Antioxidants very often give to the food a bitter taste for which there is a general aversion among consumers. The aim of this study is to propose a strategy to increase the popularity of bitter-tasting vegetables among consumers using a framework developed on the theory of nudging. Nudge can be defined as 'any aspect of the choice architecture that alters people's behaviour in a predictable way, without forbidding any options or significantly changing their economic incentives'. In detail, the strategy of default option will be applied in the empirical research. A central location test was carried out to evaluate the influence of a default option on consumer choice for a healthy meal Vs. an unhealthy one. Following a between-subjects experimental design, participants choose under three experimental conditions: 1) no treatment (control), 2) healthy default option, 3) unhealthy default option. Specifically, participants were randomly assigned to one of the three experimental conditions arriving in After answering a brief questionnaire (collecting the laboratory. socio-demographics and psychographics), individuals received a coupon for a free-lunch in a local restaurant and were asked to select their meal. In the two treatments, the default option was applied. Results yielded that the unhealthy option was the most preferred one across all the conditions in the experiment. The rate of choice of the unhealthy meal vs. healthy meal in control condition and in unhealthy treatment are exactly the same. In healthy treatment, where the default option was used as a tool to improve choices of consumers, a 5% more of participants chose the healthy option. So, we can suppose that this is the share of individuals who switched from the unhealthy to the healthy meal.

Morning, April 9, 2019 (Tuesday)

Time: 10:45~12:15

Venue: Tapies meeting room

6 presentations-Topic: "Food Economics and Food Safety Management"

Session Chair: Prof. Martin A.J. Parry

K1012 Presentation 4 (11:30~11:45) The Use of Consumer Segmentation to Target Public Health Nutrition Interventions Sunny Sharma, James Bell, Sophie Bates, **Alice Robinson** Ipsos MORI, London, UK

Abstract- In recent years there has been growing consensus that universal programs to improve health outcomes should be complemented by interventions targeted to specific sub-groups who have unique characteristics and needs (National Collaborating Centre for Determinants of Health 2013). However, targeted interventions are limited if they are designed on demographic criteria alone, which is often all that are available. To ensure we have a holistic understanding of populations, a thorough appreciation of their beliefs, attitudes and behaviors are required, which requires an expanded evidence base. The Base of the Pyramid Study, funded by the Bill and Melinda Gates Foundation, was designed to fill such a gap. Demographic and socio-economic variables were captured via representative surveys in Nigeria, Uttar Pradesh (India) and Bangladesh, which were augmented by data on attitudes to food, income and spending, behaviors around food preparation and expenditure and underlying beliefs about nutrition and food intake. These data were analyzed using a segmentation model- a common method in commercial market research to segment customer bases, but which has been hitherto only used rarely in the public health space. We identified 5-6 segments per country which were differentiated by the variables mentioned above. We also developed a series of recommendations on how to target these groups most effectively with nutrition interventions. Although our approach has not been implemented programmatically, this study showcases an important method for understanding population sub groups. This method encourages targeting with messages that speak to individuals' motivations and beliefs, thus fostering a more human-centered conception of intervention science.

Morning, April 9, 2019 (Tuesday)

Time: 10:45~12:15

Venue: Tapies meeting room

6 presentations-Topic: "Food Economics and Food Safety Management"

Session Chair: Prof. Martin A.J. Parry

K4018A Presentation 5 (11:45~12:00)
A new functional beverage made with rose petals and Kombucha culture
Bilge Ertekin Filiz, Kader Oral, Nimet Çakıroğlu, H. Nilgün Budak, Zeynep B. Güzel-Seydim
Suleyman Demirel University, Isparta, Turkey

Abstract- Kombucha is a refreshing beverage prepared by the fermentation of black tea and sucrose with a symbiotic culture of bacteria and fungi. Kombucha is an important probiotic source for vegan nutrition. Furthermore, it has been claimed that kombucha has a number of health effects such as regulating gastrointestinal functions and protecting against cancer, infectious diseases, and cardiovascular problems. Rosa damascena Mill., is known as "Isparta rose", have an important part of culture and city economy. Generally, it is used for the manufacture of cosmetic products and various food products such as jam and Turkish delight. In this study, it was aimed to manufacture a new fermented functional beverage using Kombucha culture and rose petals. The tap water was boiled and rose petal concentrate and sugar were added then cooled. Black tea was used as a control sample. Kombucha fungi were aseptically introduced to samples. The fermentation continued for 15 days at room temperature. At the end of fermentation, the fungi were removed from fermentation media with an aseptic spoon. Sensorial, microbiological, chemical (pH and titratable acidity) and antioxidant properties (ORAC and TEAC) of fermented beverages were evaluated. The beverage with rose petal had better scores than control samples in sensory evaluation. Counts of Lactococcus spp., Lactobacillus spp., acetic acid bacteria, and yeast were insignificantly higher in a beverage with black tea samples. Antioxidant values of beverage with black tea (control) was the higher than beverage with rose petals. As a consequence of this study, an acceptable new probiotic product was developed with "Isparta roses".

Morning, April 9, 2019 (Tuesday)

Time: 10:45~12:15

Venue: Tapies meeting room

6 presentations-Topic: "Food Economics and Food Safety Management"

Session Chair: Prof. Martin A.J. Parry

K4014 Presentation 6 (12:00~12:15) Determination of *Lactobacillus kefiri* and *Lactobacillus parakefiri* by qPCR in Mice Feces Fed with Natural Kefir **Tuğba Kök Taş**, Zeynep Banu Güzel-Seydim Suleyman Demirel University, Isparta, Turkey

Abstract-Kefir is produced using kefir grains or starter cultures. The kefir produced using grains is the most authentic and natural kefir type. Lactobacillus kefiranofaciens, Lactobacillus kefiri, Lactobacillus parakefiri, Lactobacillus kefirgranum, and Kluyveromyces marxianus are among the probiotic and kefir-specific bacteria and yeast. This project investigates whether the kefir-unique lactic acid bacteria (LAB) were transferred to the fecal samples of mice after feeding the experimental animals with the kefirs produced using kefir grains and commercial cultures. Comprising samples from two groups fed with the natural kefir produced using kefir grains and kefir produced using starter cultures (300 µl/day-kefir) and one control group (300 µl/day-phosphate buffer), the fecal samples of a total of 30 BALB/c mice were collected. The fecal samples of the mice in each group (n=10) were collected from the metabolic cages on day 1, 5, 10, and 15 and DNA isolations were performed on the samples. For the identification of the standard strains of certain lactic acid bacteria, especially the bacteria strains in the kefir grains, the quantitative polymerase chain reaction (qPCR) method was employed using the appropriate specific primers. Among the kefir grains-specific bacteria, the concentrations of L. kefiri, and L. parakefiri on day 10 in the fecal microbiota of the mice fed with the kefir produced from natural kefir grains were 2.28 log cfu/g and 4.85 log cfu/g, respectively. In comparison with the bacterial composition of kefir, detecting the 70-90% of the bacterial population in the fecal microbiota indicated that the bacteria had a high probiotic potential. The concentrations of the probiotic bacteria found naturally in the microbiota of mouse intestines including Lactobacillus acidophilus, Lactobacillus helveticus, Lactobacillus casei, and Bifidobacterium bifidum were also analyzed and determined to be higher in the fecal samples of the mice fed with kefir, which indicated that kefir consumption increased the probiotic content. In conclusion, as an intestinal health-promoting dairy beverage, through the consumption of kefir, the natural bacteria found in kefir contributed to the colonization in the intestines and showed a high probiotic potential.



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 9, 2019 (Tuesday)

Time: 13:55~15:25

Venue: Tapies meeting room

6 presentations-Topic: "Food Nutrition and Health"

Session Chair: Prof. Jose Luis Araus Ortega

K1010 A Presentation 1 (13:55~14:10) Assessment of Dietary Intake Capture Methods in Three Large-Scale Surveys Sunny Sharma, **James Bell**, Sophie Bates, Alice Robinson Ipsos MORI, London, UK

Abstract- There is debate about the optimal method for capturing dietary intake in nutrition surveys. Three methods are typically used: an open recall question, which asks respondents to list all food they consumed within a given time period (typically 24 hours) with loose prompting, a closed recall question which ask respondents to indicate whether or not they consumed foods based on a pre-coded list, and a food frequency question, which asks respondents how frequently they have consumed certainly categories of food within a given time period. Typically, one method is chosen, in the knowledge that results will vary based on the bias and recall burden that each introduces (Thompson and Byers 1999). However, the lack of a gold standard approach is hampering efforts to accurately measure dietary intake. The Base of the Pyramid Study, funded by the Bill and Melinda Gates Foundation and conducted by Ipsos MORI, aimed to contribute to this debate. Questionnaires were administered using a nationally representative sampling strategy to respondents in Nigeria, Uttar Pradesh (India) and Bangladesh between 2015 and 2018. In each questionnaire modules using all three methods described above were included. This marks a departure from the norm, where one method is typically chosen. As expected, each method produced different results, with open recall methods showing lower food intake than closed methods. Our hypothesis, therefore, is that the true value is likely to lie in between these measures. Given that the questionnaire was successfully administered to nearly 30,000 individuals over the fieldwork period, this shows that it is feasible from a time, cost and respondent engagement perspective to include all measures to obtain a more precise result, although this was aided by the tablet-based survey method. The research has implications for the future of dietary intake questionnaires and building the public health nutrition evidence base.

Afternoon, April 9, 2019 (Tuesday)

Time: 13:55~15:25

Venue: Tapies meeting room

6 presentations-Topic: "Food Nutrition and Health"

Session Chair: Prof. Jose Luis Araus Ortega

K2001 A Presentation 2 (14:10~14:25)
Biological Study to Evaluate the Protective Effect of Curcumin on Health Problems Associated with High Calorie Diet
Hassan A. Elhendy, Nasser I. Abo EL Naga, Doaa A.Gareeb and Wesam Y. Nyazy Alexandria University, Alexandra, Egypt

Abstract- The aim of the study was to investigate the effects of curcumin on biochemical parameters of male rats. Thirty five rats weighing 82±2 g were divided randomly into five groups. The control negative and positive groups were not being treated with curcumin. The remaining three groups were treated with curcumin by the following doses: 25 mg, 50 mg, and 100 mg /kg b. wt. / day by oral gavage for eight weeks. The results showed that curcumin treatment at dose (100 mg/kg b. wt.) significantly reduced glucose concentration, decrement in total cholesterol (TC), triglycerides (TG) and low-density lipoprotein (LDL) concentration, (HDL) increment in high-density lipoprotein concentration, reduced aspartate aminotransaminase (AST), alanine aminotransaminase (ALT), alkaline phosphatase (ALP) and bilirubin concentration in the serum. The study concluded that Curcumin can be used to overcome some health problems such as diabetes, obesity and cardiovascular diseases.

Afternoon, April 9, 2019 (Tuesday)

Time: 13:55~15:25

Venue: Tapies meeting room

6 presentations-Topic: "Food Nutrition and Health"

Session Chair: Prof. Jose Luis Araus Ortega

K1016 A Presentation 3 (14:25~14:40) What is in the box? An Analysis of the Impact of Recipe Boxes on Food Literacy **Amanda F. Shiach** University of London, London, UK

Abstract- Recipe boxes are a new retail phenomenon, though niche, as they are expensive. They offer ingredients and recipes for cooking complete dishes. This novel study aims to identify key features of recipe boxes and their impact on food literacy in its broadest sense. Identification of current recipe box companies (9) was made along with an online survey of their features and offerings, including creation of a comprehensive database of their recipes (132). On-line questionnaires (76) and face-to-face interviews (4) with users of recipe boxes explored the impact of recipe box use directly. Assessment was made using Vidgen's model of Food Literacy as a flexible tool. A nutritional analysis was conducted using FSA and WHO standards, and comparison with recipes from other sources made using data from similar studies. The ready availability of pre-prepared food negates the need for, and discourages the acquisition of, cooking skills. There is an increasingly unhealthy population with a rise in obesity and non-communicable diseases connected to food and diet. The concept of food literacy has arisen as skills with food are commonly reported to have declined, in parallel with an increasing reliance on processed food. A literature search confirms that food literacy has its origins in health literacy with an initial focus on practical cooking skills and nutrition, but has expanded to incorporate social, cultural and economic features.

Individuals with greater food literacy are regarded empowered to feed themselves and their households more healthily. Vidgen's model of food literacy has at its nexus a mechanism of Certainty, Choice and Pleasure that influence nutrition, rather than nutrition being a goal in itself. Applying Vidgen's model, recipe boxes were deemed to positively impact food literacy. The nutritional profile of the recipes themselves was lacking, with only 1/3 achieving FSA and WHO goals, and achieving the worst comparative profile.

Afternoon, April 9, 2019 (Tuesday)

Time: 13:55~15:25

Venue: Tapies meeting room

6 presentations-Topic: "Food Nutrition and Health"

Session Chair: Prof. Jose Luis Araus Ortega

K1013 A Presentation 4 (14:40~14:55) The Use of Private Sector Data Collection Methods for Public Health Nutrition Research Sunny Sharma, James Bell, Sophie Bates, **Alice Robinson** Ipsos MORI, London, UK

Abstract- Despite advances in data collection technologies over the past decade (including light-weight and high-powered tablet devices and versatile software for survey capture) the majority of large-scale nutrition surveys are still conducted using paper-based materialsknown as PAPI (paper-assisted personal interview) (Amoutzopolous et. al. 2018). The reliance on paper-based methods poses several problems, including high cost, long fieldwork periods, errors during data collection or when answers are entered into computer databases and limited capability for doing sophisticated data checking and validation (Wilcox et, al 2012, Leisher 2014, Choumert Nkolo, Spence & Taylor 2016). The Base of the Pyramid Study, funded by the Bill and Melinda Gates Foundation and conducted by Ipsos MORI, was designed to test the use of digital data collection methods (common in the private sector) to collect nutrition data. The study ran from 2015-2018 and collected two rounds of representative data in Nigeria, Uttar Pradesh (India) and Bangladesh using a CAPI methodology (computer assisted personal interviewing). This enabled the surveys to be completed in shorter timeframes and for less cost than other studies of this type. Back-checking and data validation procedures were also easier to implement. Although the study was not set up to compare the data produced from CAPI and PAPI methods, a post hoc analysis suggests that data collected were broadly in line with known population parameters. These findings contribute to the growing body of literature on new survey implementation methods and provide guidance on how data can be collected accurately, quickly and cost-effectively to build the global evidence base in public health nutrition.

Afternoon, April 9, 2019 (Tuesday)

Time: 13:55~15:25

Venue: Tapies meeting room

6 presentations-Topic: "Food Nutrition and Health"

Session Chair: Prof. Jose Luis Araus Ortega

K2043A Presentation 5 (14:55~15:10) BigPicnic Big Questions – engaging the public with Responsible Research and Innovation on Food Security **Liliana Derewnicka**, Helen Miller, Gail Bromley BGCI, UK

Abstract- Food security is one of the greatest challenges facing society today. Yet, decisions about food policy are often top down and do not provide all societal actors with a chance to contribute or engage with the debate. BigPicnic used participatory approaches to facilitate dialogue between different actors and ensure future research, innovation and policy reflects the opinions and needs of these wider audience groups.

BigPicnic is a three-year, EU funded project that brings together the public, scientists, researchers, food and agriculture industries and NGOs to talk about food security. The aim of BigPicnic is to generate public dialogue about food and food security to support future Responsible Research and Innovation (RRI) related to these ideas.

The BigPicnic partnership is made up of 19 partners (18 in Europe and 1 in Africa) including botanic gardens, universities, a science shop, an institute for art, science and technology, and an international NGO. With support from the other members of the partnership, each botanic garden worked with local individuals and groups to raise awareness and start conversations about food security. Each botanic garden has co-created exhibitions and science cafes with their local audiences, including groups of people they do not usually work with. As a result of this process BigPicnic reached around 186,000 people.

Using the BigPicnic project data, a series of recommendations have been developed. Food production, participation, education and organisational development were all shown to be important in the context of the project and food security. The common thread that unites all of these individual areas is heritage and the role that food plays in our individual lives. To address food security, heritage and its overarching influence in all aspects of the debate must be acknowledged. This presentation will examine the major findings of the project and consider how these should be built upon.

Afternoon, April 9, 2019 (Tuesday)

Time: 13:55~15:25

Venue: Tapies meeting room

6 presentations-Topic: "Food Nutrition and Health"

Session Chair: Prof. Jose Luis Araus Ortega

K2013 A Presentation 6 (15:10~15:25)
Dark Tea and zijuan Puerh Tea Showed the Most Strongest Inhibitory Effect toward α-glucosidase among 50 Chinese Tea Products
Jian Ying, Xi Wang, Can Hou, Yihang Fan, Jie Xiao, Song Li, Zhizhong Dong, COFCO Nutrition and Health Research Institute
Beijing Key Laboratory of Geriatric Nutrition Food Research, China.

Abstract- Tea is one of the important cash crops in China, which can provide wide range of well-known health benefits. For example, by inhibiting α -glucosidase, tea could offer help to lower starch digestion and control postprandial glucose level. There are 6 major varieties of tea products in China, include green tea, white tea, yellow tea, oolong tea, black tea and dark tea. To screen the most potent tea product that can sufficiently inhibit α -glucosidase activity, we compare 50 representative Chinese tea products using in vitro enzymatic assay. Meanwhile, major chemical components were analyzed. We calculated the relations between activity and components. It was found that black tea showed the strongest inhibitory effect among all varieties, in average. Appropriate proportion of catechin, theaflavin, thearubigins and theabrownine made the key contribution; while caffeine showed a synergistic effect. Except black tea, white tea shower stronger inhibitory effect those of other varieties, followed by oolong tea, green tea and dark tea. However, IC50 of dark tea can be range from 0.007-1.0 mg/ml due to different origins, plucking time and processing techniques. In our study, dark tea originated from Jiangxi province in China showed the strongest effect when compared with others. A very special type of raw Puerh tea, named zijuan, which was rich in anthocyanidins, showed similar activity to Jiangxi dark tea (IC50=0.01 mg/ml). We conclude that in order to slow down starch digestion and absorption, dark tea and raw Puerh tea zijuan had the potential to be the optimal choices.



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Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Miro meeting room

8 presentations-Topic: "Food Processing and Quality Analysis"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

K3003 A Presentation 1 (15:40~15:55)

Effect of salt in moisture content on proteolysis and texture development in Brački cheese during ripening

Ante Rako, Milna Tudor Kalit, Samir Kalit

University of Zagreb Faculty of Agriculture, Croatia

Abstract- Texture characteristics of cheese are influenced by the chemical composition of milk, technological processes during cheese production and microclimate conditions during ripening. As casein forms the base of cheese structure in which other compounds are incorporated, proteolysis is considered as the most important process, which contributes to the formation of characteristic cheese texture. The objective of this study was to determine the effect of salt in moisture content on proteolytic and textural changes during ripening of Brački cheese, Croatian traditional hard ewe's milk cheese, over a ripening period of 120 days. Fifteen cheese batches were manufactured according to the traditional manufacturing procedures and sampling were performed every 30 days. The content of salt in moisture (P<0.01) significantly increased during cheese ripening. As a result, of primary proteolysis α s1-casein and β -casein content significantly decreased (P<0.01; P<0.05) which is accompanied by a significant (P<0.05) accumulation of α s1-I-casein and γ -casein (P<0.01) during secondary proteolysis in cheese throughout ripening. The increase of salt in moisture in cheese had higher effect on degradation of α s1 (r = -0.53, P < 0.01) than β -casein (r = -0.21, P < 0.01). Due to the extensive proteolysis, TCA-SN (P<0.01), WSN (P<0.05) and total free amino acids (TFAA; P<0.01) significantly increased throughout ripening time. Nevertheless, the increase of salt in moisture significantly (P<0.01) stimulated accumulation of α s1-I (r = 0.34) and γ -case in (r = 0.64) as well as TCA-SN (r = 0.65), WSN (r = 0.64) and TFAA (r = 0.61) content in Brački cheese. Results showed significant (P<0.01) increase of stress at break and parallel decrease (P<0.01) of strain at break during ripening which indicated that increase of salt in moisture content developed a significantly (P < 0.01) harder (r = 0.73) and shorttextured (r =-0.87) Brački cheese.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Miro meeting room

8 presentations-Topic: "Food Processing and Quality Analysis"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

K2038 Presentation 2 (15:55~16:10)

Effect of ohmic heating on the physical properties of fried carrot cubes **Mohammed M. Ismail**, Sebahattin S. Turgut, Erkan Karacabey and Erdogan Kucukoner Suleyman Demirel University, Isparta, Turkey

Abstract-In the present study, the effect of ohmic heating on some physical and quality properties of carrot cubes was evaluated. Carrot cubes (1 cm3) were pre-treated at two different voltage levels (95 V and 150 V) for 10 seconds. Then, carrot cubes were fried in sunflower oil for 60 seconds at 180 °C. Moisture content (%, db), oil content (%, db), textural properties (firmness; g-force and hardness; g-force) and colour parameters (L*, a*, b* and total colour change; ΔE) of the samples were determined. According to the results, the moisture content of carrot samples varied in the range of 67.98±0.82-88.72±0.03 and the lowest corresponding value belonged to the carrot sample treated at 150 V. Similarly, the highest oil content (7.15±0.90) was measured for that same cube sample, as well. Any significant difference in hardness value was not observed among all fried samples (p>0.05). For colour parameters, the highest L^* (61.04±1.03) and a^* (31.22±1.52) were measured at the surface of raw carrot cubes and highest $b^{(44.35\pm0.82)}$ was found for the sample treated at 95 F. The lowest L^* (51.49±1.03) was measured on the surface of the samples subjected to the ohmic heating at 150 V. The lowest values corresponding to a^* (18.95 ± 1.43) and $b^*(38.10\pm1.45)$ were for the samples fried without ohmic treatment. The total colour change (ΔE) was in between 15.68±1.62 to 16.32±2.26 for all fried samples.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Miro meeting room

8 presentations-Topic: "Food Processing and Quality Analysis"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

K1006A Presentation 3 (16:10~16:25) Advanced agriculture "growing" medicines through the plants: rocket salad case **P. Mormile**, M. Rippa and A. Ritieni Institute of Applied Sciences and Intelligent Systems of CNR, Italy

Abstract-The effects of UV-B radiation on the plants are well known and recently they are attracting a great deal of attention because of the production of a lot of secondary metabolites which are highly beneficial substances for human health, like anthocyanins, lycopene, carotenoids, flavonoids and polyphenols. Recent studies demonstrated the possibility to exploit UV-B in order to induce metabolic changes in fruit, vegetable and herbs to satisfy consumer demand for natural health-promoting food products. The contribute of UV-B for inducing secondary plant metabolites, as potential benefits for human health, is emphasized by new plastic films, that, according to their optical properties, permit the right dosage of UV-B crossing into the greenhouse. We performed trials concerning the production of antioxidant element from rocket salad (Eruca Vesicaria) grown in greenhouses covered with two plastic films having different "window" to the UV-B radiation: 0% and 26%. Samples from the two greenhouses were analysed in order to measure the various phenolic components from the point of view both qualitative and quantitative. We analysed the percentage of many substances extracted in the two samples and we found that, thanks to UV-B action, the rocked salat grown under plastic with 26% exhibit very high contents of luteolin and quercitin in comparison with that cultivated under the plastic with no transmittance to UV-B radiation. Our experimental results confirm the possibility to exploit the right percentage of UV-B radiation, owing appropriate greenhouse plastic covers, in order to produce natural medicines through the food.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Miro meeting room

8 presentations-Topic: "Food Processing and Quality Analysis"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

K2027 A Presentation 4 (16:25~16:40)

Conventional drying of tomato quarters after carbonic maceration pretreatment Nursaç AKYOL, Mustafa ÖZÇELİK, Erdoğan KÜÇÜKÖNER, **Erkan KARACABEY** Suleyman Demirel University, Isparta, Turkey

Abstract-Pretreatments are important applications to manipulate drying characteristics of food materials. In this extent, different methods have been developed and applied in literature, but making efforts to find new techniques for this purpose continues. Serving this aim, in the present study, carbonic maceration (CM) was investigated to figure out its effect on drying characteristics of tomato quarters. Carbonic maceration has been used for a long time in winery industry, but it is novel process for drying processes. In literature limited study provide information about the mechanistic effect of this pretreatment on material structure. In the current study, parameters of carbonic maceration (pressure, time, temperature) were examined, as well as drying temperature. Process optimization for carbonic maceration pretreatment and following drying process was proposed and parameters given above were optimized. Response surface methodology was used to obtain model to explain variation in drying characteristics of tomato quarters. As responses, drying time was minimized. CM pressure, CM time, and CM temperature were in the ranges of 0.1-0.3 MPa, 8-24 h, and 4-40 °C, respectively. Only the parameter of drying, temperature varied from 60-80 °C. Proposed model has a potential to explain more than 90% of the variation in drying time with these parameters. During the drying process, effective moisture diffusivity (EMD) was also calculated using Fick's second law. By the way, CM pretreatment and drying process together was optimized, as well as one of the main drying characteristics, EMD was determined for process evaluation. Current study provides information about CM pretreatment applied before drying process for tomato quarters and for modeling and process optimization could be a good way for this process design.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Miro meeting room

8 presentations-Topic: "Food Processing and Quality Analysis"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

K4006 Presentation 5 (16:40~16:55) ENRICHMENT OF RICE WITH GRAPE PEEL POWDER BY EXTRUSION La ś Martins Fontoura, **Jos é Luis R. Ascheri** and Jhony W. S. Vargas EMBRAPA FOOD TECHNOLOGY, BRAZIL

Abstract- Following the tendency to reduce food loss and contributing with environment sustainability, generating value-added utilizing food industry residues, this research aims thetechnological characterization of grape by-productand rice extruded flour. The physical behavior of rice (Oryza sativa L.) and grape peel (Vitis vinifera L.) extruded flours were investigated. A range of grape peel (15 - 25%, screw speed (100 - 150 rpm) and moisture content (18 - 26%) were studied. The aim of this study was to evaluate the effect of extrusion cooking process in a grape peel powder and the white rice flour addition. The results of bulk density was between 270 and 566 kg/m3; sectional expansion ratio was 2.42 to 6.51; longitudinal expansion ration was 0.58 to 0.96; volumetric expansion ratio was 2.15 to 4.64; water solubility index was 7.60 to 15.57; water absorption index was 4.35 to 6.82. Results of instrumental color was measured and the range of L* was 26.38 to 37.68; a* was 11.70 to 14.56 and b* was 3.78 to 7.42. The grape peel addiction on extrudates increased the bulk density and longitudinal expansion index. However, decreased on sectional expansion index, volumetric expansion index, water solubility index, water absorption index and luminosity. Results obtained with conditions processing demonstrated the incorporation of grape peel in rice is viable.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Miro meeting room

8 presentations-Topic: "Food Processing and Quality Analysis"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

K2041-A Presentation 6 (16:55~17:10)

Evolution of the volatile flavor compounds of Chinese horse bean-chili-paste analyzed by GC×GC-TOMFS combined with GC-MS-Olfactometry

Yunhao Lu

Sichuan University, Chengdu, China

Abstract-The production of Chinese horse bean-chili-paste (CHCP) involves three fermentation phases: a chili-to-moromi phase, a horse bean-to-meju phase and a moromi-meju mixed fermentation phase. In consideration of raw materials and fermentation phases, the evolution of key volatile flavor compounds in CHCP were investigated in this study by using GC×GC-TOMFS, GC-MS, olfactometry and principal component analysis. Results of GC-MS-olfactometry showed that there were 22 key flavor compounds in CHCP. Among which, (E)-2-nonenal, nonanal and 3-methyl-1-butanol were primarily from chili, and 1-octen-3-ol was from horse bean. Ethyl decanoate and linalool were mainly formed during the chili fermentation, while ethyl isobutyrate, phenylethyl alcohol and benzene acetaldehyde were found closely related to the horse bean-to-meju process. The mixed fermentation of chili moromi and horse bean meju was significant for the accumulation of 13 key compounds, including 2-methyl-1-butanol, 3-methyl butyraldehyde, 2-methyl butyraldehyde, ethyl isovalerate, ethyl hexanoate, ethyl benzoate, ethyl phenylacetate, guaiacol, 4-ethyl phenol, guaiacol. 4-hydroxy-2,5-dimethyl-3(2H)-furanone (HDMF), 4-hydroxy-2(or 4-ethyl 5)-ethyl-5(or 2)-methyl-3(2H)-furanone (HEMF) and 3-(methylthio) propanal. Further, the results of GC×GC-TOMFS combined with GC-MS-olfactometry showed there were 69 discriminant volatiles were defined to cause the differentiation among the final product CHCP, principal component analysis revealed that eight volatiles were highly associated with 3-months-ripened CHCP and formed malty and pungent flavor as its main fragrance configuration. Twenty compounds, mainly presenting fruity and floral aroma, were important to differentiate 12-month-ripened CHCP. In addition, other eight volatiles were characteristic for 24-months-ripened CHCP, which were dominated by smoky, burnt and caramel-like aroma. Results are conducive to understand the accumulation mechanism of CHCP flavor compounds and promote the quality improvement.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Miro meeting room

8 presentations-Topic: "Food Processing and Quality Analysis"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

K2031-A Presentation 7(17:10~17:25) Assessment of Polycyclic Aromatic Hydrocarbons in Retail Smoked Foodstuffs on the Romanian Market by Gas Chromatography – Mass Spectrometry **Radu C. Racovita**, Florentina Israel-Roming University "Politehnica" of Bucharest, Bucharest, Romania

Abstract- Polycyclic aromatic hydrocarbons (PAHs) are a diverse class of food contaminants formed as a result of smoking, drying, roasting, baking, grilling, barbecuing, and frying of certain foodstuffs. Smoking, in particular, can lead to accumulation of considerable amounts of these known carcinogens in food products; thus, there is an obvious need for careful monitoring of PAH levels in smoked foodstuffs, as well as for high performance analytical methods suitable for this task. According to the recommendation of the Panel on Contaminants in the Food Chain (CONTAM Panel) of the European Food Safety Authority (EFSA), which later led to European Commission (EC) Regulation No. 835/2011, four particularly genotoxic and carcinogenic PAHs must be carefully monitored in foodstuffs sold on the European market: benzo[a]pyrene (BaP), chrysene (CHR), benz[a]anthracene (BaA), and benzo[b]fluoranthene (BbFA), respectively. In this work, we present analytical performance data for a gas chromatography-mass spectrometry (GC-MS) method for the detection and quantification of sixteen PAHs in organic extracts obtained from smoked food matrices, including the four EC-regulated PAHs, together with some results obtained using a selection of smoked foodstuffs sold by large retailers on the Romanian market, ranging from smoked fish to smoked meat and cheese. While none of the analyzed retail products exceeded PAH limits for the respective food class specified by the aforementioned EU legislation, our list is still far from comprehensive and work continues in this direction, targeting in addition some smaller retailers, as well as traditionally smoked foodstuffs, the latter of which currently have somewhat more permissive limits established through EC Regulation No. 1327/2014.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Miro meeting room

8 presentations-Topic: "Food Processing and Quality Analysis"

Session Chair: Prof. Raquel de Pinho Ferreira Guin é

K2042-A Presentation 8(17:25~17:40) Insight into the effect of shikimic acid on biofilm formed by Staphylococcus aureus **Jin-rong Bai** Sichuan University, Chengdu, China

Abstract- The biofilm formation of Staphylococcus aureus on food contact surfaces is the main risk of food contamination. In the present study, we firstly investigated the inhibitory effect of shikimic acid (SA) on biofilm formed by S. aureus. The aim of this study was to evaluate the inhibitory activity of shikimic acid (SA) against biofilm formation of Staphylococcus aureus and to explore its potential molecular mechanism. Crystal violet staining assay showed that SA clearly reduced the biomass of the biofilm at its sub-MICs. Light microscopic images and scanning electron microscope (SEM) observations suggested that SA inhibited the biofilm adhesion on glass slides and induced apparent collapse of biofilm architecture. Meanwhile, fibrinogen binding assay showed that SA had obviously effect on the S. aureus bacteria adhesion. In addition, XTT reduction assay and confocal laser scanning microscopic images illustrated that the metabolic activity and the viability of the SA-treated biofilm cells significantly decreased. Cell mobility of the SA-treated S. aureus was also inhibited. These observations suggested that SA inhibited the initial biofilm formation by interfering the metabolic activity, the cell viability, and the cell mobility of S. aureus. However, SA failed to disrupt the one-day-old mature biofilm of S. aureus even at the concentrations higher than MIC, suggesting that SA disturbed the early steps in the biofilm formation of S. aureus. qRT-PCR analyses showed that SA down-regulated the transcription of sarA, while up-regulated the transcription of agrA, which resulted in the prevention of biofilm formation. So, SA could be a potential antibiofilm agent to inhibit biofilm formation of S. aureus.

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 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Tapies meeting room

8 presentations-Topic: "Food Microbiology and Biotechnology"

Session Chair: Prof. Carlos A. F. Oliveira

K3004 Presentation 1 (15:40~15:55)

Evaluation of microbiological and toxicological quality (heavy metals) in fresh artisan cheese commercialized in Puebla city, Mexico.

Alfredo C. Ben fez-Rojas, Raúl J. Delgado-Macuil, Genaro G. Amador-Espejo, Eliana Eustaquio-Rosales and Yolanda L. Martinez-Martinez

Universidad Popular Autonoma del Estado de Puebla A.C., M éxico

Abstract- Artisanal fresh cheese made from unpasteurized milk and under uncontrolled production conditions represents an important focus for public health in developing countries. The present work was carried out with the purpose of evaluating the microbiological and toxicological quality (heavy metals) in fresh artisanal cheeses and marketed in the municipality of Puebla. The process was divided into two samplings covering the months of September, October and November of 2016, the second sampling was carried out in the months of February, March and June of 2017, processing a total of 89 samples from 10 markets located in the urban area of the municipality of Puebla. The microbial growth of mesophilic bacteria and total coliform bacteria was evaluated by the plate count technique, in accordance with the guidelines of Bacteriological Analytical Manual from the Food and Drug Administration. The results showed the following average counts for both samplings and all markets: for aerobic mesophyll bacteria 5.55 log CFU/g and for total coliforms of 3.80 log CFU/g. The quantification of heavy metals was carried out by the technique of atomic absorption spectrophotometry. The average results obtained were, for copper 1.81 mg/kg, chromium 0.06 mg/kg, lead 2.96 mg/kg, cadmium 0.13 mg/kg and for the element mercury was 0.03 µg/kg.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Tapies meeting room

8 presentations-Topic: "Food Microbiology and Biotechnology"

Session Chair: Prof. Carlos A. F. Oliveira

K2015 A Presentation 2 (15:55~16:10)
Survival of Staphylococcus aureus and Listeria monocytogenes in ready-to-eat Mediterranean vegetable salads
Murad Al-Holy, Amin N. Olaimat, Mahmoud Abu Ghoush Hashemite University, Zarqa, Jordan

Abstract- Salads form an indispensable healthy part of the Mediterranean diet. Recently, salads have been involved as a transmission mode for pathogens. The current study aimed to investigate the growth behavior Staphylococcus aureus and Listeria monocytogenes in different types of salads namely; tomato-cucumber (TC) salad without additives, TC with additives (1.0% lemon juice and 0.5% salt), TC with tahini (10% w/w), coleslaw, and toum sauce. Salads were inoculated with ca. 5-6 \log_{10} CFU/g of either a cocktail of 5 serotypes of Staph. Aueus or L. monocytogenes. The salads were stored at $4 \, \text{C}$, $10 \, \text{C}$ or $24 \, \text{C}$ for 6 d. The pathogens were able to grow or survive in the different salad types except for coleslaw and toum sauce, where the numbers in these salads declined sharply at 24 but slowly at 4 and 10°C. TC with tahini underpinned the growth of the of both Staph Sureus and L. monocytogenes, where both of the pathogens survived well in the different salads at low temperatures. However, at 24 °C, both of the pathogens grew to high levels after 1-2 d of storage followed by a sharp decline till the end of the storage period. Staph aureus exhibited greater resistance in low pH salads. This study proves that Staph. Sureus and L. monocytogenesare able to grow or survive in different types of salads. Therefore proper control of storage temperature, strict hygienic practices and application of decontaminative washing steps prior to preparation are crucial.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Tapies meeting room

8 presentations-Topic: "Food Microbiology and Biotechnology"

Session Chair: Prof. Carlos A. F. Oliveira

K2024 A Presentation 3 (16:10~16:25)

Antimicrobial Susceptibility of Clostridioides (Clostridium) difficile Strains Isolated from Chicken Carcasses

Esra Akkaya, Hilal Colak, Hamparsun Hampikyan, Karlo Muratoglu, Omer Cetin, Enver Baris Bingol

Istanbul University-Cerrahpasa, Istanbul, Turkey

Abstract- Clostridioides (Clostridium) difficile is a gram-positive, anaerobic, spore-forming, rod-shaped nasocomial bacteria which cause pseudomembranous colitis, toxic megacolon, intestinal perforation and diarrhea due to long-term usage of antibiotics. Advanced age, long duration of hospitalization and exposure to certain antimicrobial agents are the most common risk factors for C. difficile infection (CDI). The main virulence of the bacteria takes source from its entero- and cyto-toxins. Nowadays, C. difficile can be frequently isolated from butchery animals and animal originated foods that are identified as new potential reservoirs for C. difficile. This study was conducted to investigate the antibiotic susceptibility of isolated C. difficile strains from chicken carcasses against ampicillin, cefotaxime, clindamycin, amoxicillin-clavulanic acid, imipenem, metronidazole, tetracycline and vancomycin. The bacterium was isolated in 69 out of 185 (37.3%) examined chicken carcass samples. All isolates were susceptible to amoxicillin-clavulanic acid (100.0%), vancomycin (97.1%), metronidazole (88.4%) and tetracycline (95.7%), whereas resistant to cefotaxim (97.1%) and imipenem (89.9%). In conclusion, the presence of C. difficile isolates in chicken carcasses may be perceived as a potential risk for consumers especially for elders, youngsters, long terms wide spectrum antibiotic used and immuno-suppressed individuals. The unconscious use of antibiotics as protective, therapeutic and productive in poultry animals has revealed the importance of C. difficile which is responsible of antibiotic-associated diarrhea to pseudo-membranous colitis and toxic mega colon.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Tapies meeting room

8 presentations-Topic: "Food Microbiology and Biotechnology"

Session Chair: Prof. Carlos A. F. Oliveira

K2025 Presentation 4 (16:25~16:40)

A Computational Fluid Dynamics (CFD) Study for Heating Bacterial Culture Media and Effect of Natural Convection on Total Heat Flux Sebahattin Serhat TURGUT, Baris SARIHAN, Dudu YILDIZ, Erkan KARACABEY,

Erdogan Kucukoner

Suleyman Demirel University, Isparta, Turkey

Abstract- In the present study, a predictive model was developed for heating bacterial culture medias. One of the most common medium for microbiological studies, Plate Count Agar (PCA) was used in the experimental studies and non-linear partial differential equations for coupled heat and momentum transfer were solved by finite element model using COMSOL Multiphysics[®]. Temperature of PCA solution was recorded at three different positions and it was observed that the predicted temperature values were found to be in a good agreement compared to experimental ones according to root mean square errors calculated. Natural convection has shown a dominant impact on total heat transfer and the developed model was found to have convincing performance to explain the temperature variation during heating process and that is important to evaluate further processes like sterilization applied for microbiological studies.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Tapies meeting room

8 presentations-Topic: "Food Microbiology and Biotechnology"

Session Chair: Prof. Carlos A. F. Oliveira

K4002 Presentation 5 ((16:40~16:55) Effect of the RGB Wavelengths of LED Light on Growth Rates of Nile Tilapia Fry in Biofloc Technology (BFT) Systems **Daniela Lopez-Betancur**, Carlos Olvera-Olvera, Ivan Moreno Hernandez, Carlos Guerrero-Mendez Universidad Autónoma de Zacatecas, Mexico

Abstract- This research evaluates the effect of wavelengths of the light on growth rates of Nile tilapia fry in the order of improving sustainability in aquaculture production. For this purpose, four tanks of water with tilapias were studied. Three tanks were illuminated with LED lamps each one with monochromatic peak wavelengths (λ): Blue light (BL) tank with λ =451.67 nm, Green light (GL) with λ =513.33 nm and Red light (RL) tank with λ =627.27 nm. All tanks were illuminated with a light intensity of 0.832 [mW/cm] ^2, and they had a photoperiod of 18L:6D throughout the study. Besides, the fourth tank was illuminated only by Natural light (NL) tank, which had the function of witness tank. Each treatment included the fourth, were randomly assigned to 150L tanks that were stocked with 122 Nile tilapia fry. The Nile tilapia fry had an initial average weight of 0.24 ±0.01 g, and were grown for 73 days. The average final weight for BL, GL, RL and NL treatments were 15.54 g, 16.84 g, 17.27 g and 16.22 g, respectively. The results suggest that Nile tilapia fry was positively influenced by the red light wavelength, which was represented in the greatest mass gain.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Tapies meeting room

8 presentations-Topic: "Food Microbiology and Biotechnology"

Session Chair: Prof. Carlos A. F. Oliveira

K4003 Presentation 6 (16:55~17:10)

Application of the Synthetic Escherichia coli's Twin-Arginine Translocation Pathway for Detection of Intracellular Antibody against Hepatitis C Viral Protease

Attapol Kamthong, Phenbunya Boonyalekha, Jeerapond Leelawattanachai, Dujduan Waraho-Zhmayev

King Mongkut's University of Technology Thonburi (KMUTT) 126 Pracha Uthit Rd., Bang Mod, Thung Khru, Bangkok 10140, Thailand

Abstract- Hepatitis C is a liver disease caused by the hepatitis C virus (HCV) infection and is considered a global health problem. WHO reported that an approximately 399,000 people die from hepatitis C each year. Protease inhibitor (PI) is included in the current oral direct-acting antivirals (DAAs) combination therapy, which has been reported to show high success rate at least for genotypes 1 and 4. However, these HCV PIs are small molecule drugs; therefore, they could have serious off-target adverse effects in long-term treatment similar to that evidenced in the current HIV treatment. New type of treatment such as antibody drugs that have very high specificity and selectivity would be a better alternative to the current small molecule drugs, which often have the off-target liabilities. Our study reports the application of the PROTECT (Protease inhibitor Recognition based On Tat Export after Cleavage Tampering) assay, an in vivo detection method for protease inhibiting intracellular antibody (intrabody) based on the bacterial twin-arginine translocation (Tat) pathway, to the HCV NS3 protease system. This assay was designed such that, when protease is co-expressed inside the bacterial cytoplasm, Tat transport of the uncleaved protease substrate due to protection of cleavage site by a specific intrabody will result in β -lactam antibiotic resistance. Using anti-NS3 intrabodies isolated previously, we demonstrated that PROTECT assay could distinguish between the inhibitory and non-inhibitory anti-NS3 intrabodies resulting in selective growth in the presence of β -lactam antibiotic. This method has potentials for screening of agents that inhibit proteolytic cleavage in a bacterial cell-based assay, which may find use in identifying, reconstituting and characterizing protease inhibitors, identifying mutations on substrate that can inhibit proteolytic cleavage, and drug screening.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Tapies meeting room

8 presentations-Topic: "Food Microbiology and Biotechnology"

Session Chair: Prof. Carlos A. F. Oliveira

K4004 A Presentation 7 (17:10~17:25) Xanthan Production from Food Industry Effluents: Process and Cost Modelling **Bojana Bajić**, Siniša Dodić, Damjan Vučurović, Vladimir Puškaš, Jelena Dodić University of Novi Sad, Faculty of Technology Novi Sad, Serbia

Abstract- In order for a production process to be sustainable, it is necessary that it generates minimal amounts of waste effluents and to recycle or reuse these effluents as raw materials in another production process. Food and beverage processing industries generate large amounts of waste effluents and considering that these effluents usually have significant organic content they can be used as raw materials in the biotechnological production of different bioproducts. Biotechnological production of xanthan is one such process because its production, by the bacteria Xanthomonas campestris, is characterised by the possibility of utilising different carbohydrate substrates and raw materials. Xanthan gum is a microbial polysaccharide with extensive applications and use in the food, toiletry, oil recovery, cosmetic, and other industries. Furthermore, it is expected that the world market of this biopolymer production will rise significantly in the near future, due to its increasing use in the various industries mentioned above. Modelling and simulation of a bioprocess expands knowledge and understanding of the process and can be used for its improvement. In this research, the aim was to develop a process and cost model of biopolymer xanthan production by using SuperPro Designer software. Experimental data of xanthan production on a laboratory scale, using semisynthetic glucose-based and several food industry effluent based media, were used and incorporated into the software, together with some data obtained from the scientific literature and software database, and as a result of the simulation, costs and product revenues were obtained. The obtained results can be used for the development of xanthan production technology and scaling up this process from laboratory to industrial level. Furthermore, based on the conducted economic analysis, the developed process of converting food processing industry effluents into a value-added product showed that the examined bioprocess is viable.

Afternoon, April 9, 2019 (Tuesday)

Time: 15:40~17:40

Venue: Tapies meeting room

8 presentations-Topic: "Food Microbiology and Biotechnology"

Session Chair: Prof. Carlos A. F. Oliveira

K2039 Presentation 7 (17:25~17:40) A Brief Overview of Beverage Emulsions for Fortification Asieh Habibi, Sebahattin Serhat Turgut, **Erkan Karacabey**, Erdogan Kucukoner Suleyman Demirel University, Isparta, Turkey

Abstract- There has been increasing trend in beverage consumption especially soft drinks and functional beverages. The direct use of hydrophobic compounds in aqueous medium like beverages is in limited extent due to solubility problems. On the other hand, addition of hydrophilic compounds directly to an aqueous media leads to loss and changing structure of compounds during processing or storage. Thus, encapsulating bioactive compounds through microemulsion, nanoemulsion or emulsion compounds is an appropriate approach to combination and preservation of bioactive ingredients in beverages. This brief overview provides information about the ingredients used in beverage emulsions and researches have been carried out with high potential usage for fortification in beverage industry.



April 9, 2019 (Tuesday)

Time: 08:40~17:40

8 presentations

K4008 A Presentation 1

Inhibitory effects of the ethanolic extract of red seaweed Gracilaria fisheri on Vibrio harveyi biofilms and autoinducer-2 (AI-2)

Kulwadee Karnjana, Chumporn Soowannayan, Saksit Nobsathian, Somluk Asuvapongpatana, Kanokpan Wongprasert

Mahidol University, Thailand

Abstract- Bacterial quorum sensing (QS) interference is one of the promising therapeutic strategies to control pathogenicity bacteria. This study, we aimed to examine the anti-QS activity of the ethanolic extract from red seaweed G. fisheri against the shrimp pathogenic bacteria, V. harveyi. The bacteria were treated with the various concentrations of the ethanolic extract, and the minimal inhibitory concentration (MIC) was determined. Treatment of V. harveyi with the sub-MIC concentrations of the ethanolic extracts (5 and 10 µg/ml) showed decreased biofilm biomass. Moreover, confocal laser scanning micrographs revealed that the extract induced biofilms dispersion and increased dead bacteria in the biofilms. The underlined anti-QS activity of the extract was examined by determining the bioluminescence in the bacteria using different auto-inducer signal mutants V. harveyi. The results showed that the extract mediated decreased light production of V. harveyi by interfering the bacterial AI-2 signaling. Anti-biofilm activity of the extract was further evaluated in shrimp Penaeus vannamei. Studying by scanning electron microscopy (SEM) of the gut tissue, shrimp fed with the extract followed by orally inoculated with the bacteria showed less number of bacterial adhesion and biofilms in the gut luminal surface of shrimp. Furthermore, the bacterial colony counting in the gut and expression of the virulence factor Vopd decreased from control, in correspondent with the increased shrimp survival rate. Taken together, the results revealed the anti-QS potential of the ethanolic extract of G. fisheri, which may further applied as a biofilm dispersing agent for combating bacterial biofilm infection.

April 9, 2019 (Tuesday)

Time: 08:40~17:40

8 presentations

K4012 A Presentation 2 Effect of Air-Drying Temperatures on Physicochemical Characteristics of Asparagus **Ji Seon Park**, Soon Bae Kwon, Hye Jeong Kwon Gangwondo Agricultural Research and Extension Services(GARES) Agro-Food Research Institute, Republic of korea

Abstract- The purpose of This study examined the effects in physicochemical properties of asparagus at two different drying temperatures of cold-air drying of 40°C and hot-air drying of 60°C, and development of the asparagus soup. At hot-air drying of 60°C, the rate of protein change was significantly higher compared to cold-air drying of 40°C, while fat, carbohydrate, and fiber was decreased at 60°C. Water absorption index (WAI) was significantly higher in around 5% of cold-air drying (10.25%) and hot-air drying (11.37%) and the water soluble index (WSI) was also significantly higher at 60°C (32.10%) than those of at 40°C (27.93%). Total polyphenol was significantly higher (5% level) at hot air drying of 60°C than at 40°C and the total flavonoid was determined 60.75mg/100g at hot-air drying of 60°C and 111.12mg/100g at cool-air drying of 40°C, respectively. From these results, we manufactured asparagus soup at hot-air drying conditions. An examination of preference for hot-air dried asparagus powder examined by 30 panels depending on each different contents of 3%, 7%, and 12%. Most of people preferred asparagus powder which contains 3%.

April 9, 2019 (Tuesday)

Time: 08:40~17:40

8 presentations

K1001 A Presentation 3

Antifungal efficacy of chitosan nanoparticles against phytopathogenic fungi and its effect on zearalenone production by Fusarium graminearum.

Ahmed Gibriel, N. Rasmy, A. Sahab, A.Elnekeety, M. Abdelwahab.

Ain Shams University, Cairo, Egypt.

Abstract- Chitosan (COS) is a natural safe biopolymer that received great attention in agriculture, food, biomedical, pharmaceutical and environmental industries because their biocompatible, biodegradable, non-toxic and non-allergenic natures. The aims of the current study were to synthesize and characterize chitosan nanoparticles (COS-NPs), to evaluate the antifungal activity of the prepared COS-NPs against phytopathogenic fungi and the inhibition of zearalenone (ZEN) production by *Fusarium graminearum*. The results revealed that the deacetylation degree of COS was 86.9 ± 0.44 %, the average of molar mass was 171.41 ± 0.29 g/mol, molecular weight was 244 ± 7 kDa and the concentration of free amino groups was 0.05 ± 0.019 mol/L. the prepared COS-NPs showed the nanorod form with rough nature and particle size was around 180 nm. COS-NPs showed an excellent antifungal activity against *Alternaria tenuis, Aspergillus niger, A. flavus, Baeuvaria bassiana, Fusarium graminearum, Fusarium oxysporum, Penicillium* sp. and *Sclerotium rolfsii* in dose dependent manner. At a concentration of 800 ppm, it succeeded to prevent ZEN by *Fusarium graminearum*. It could be concluded that COS-NPs is a promise candidate as safe antifungal capable for the prevention of ZEN production.

April 9, 2019 (Tuesday)

Time: 08:40~17:40

8 presentations

K1005 A Presentation 4

Assessment of socio-economic aspects and hygiene practices of women street food vendors: Empirical evidence from Tangerang, Indonesia, and Hat Yai, Thailand Dionisius Yusuf, **Barbara Freytag-Leyer**, Werner Trossbach University of Applied Sciences Fulda, Fulda, Germany

Abstract- Street food vending is one of the few readily accessible avenues of employment open to women who need to earn a living. The low costs of entry into many types of hawking and vending as well as schedule flexibility are attractive factors for many women. The purposes of this research were to explore the socio-economic conditions and hygiene perspectives of women street food vending in Tangerang, Indonesia and Hat Yai, Thailand, by rural-urban women migrants. Semi-structured questionnaires with 20 sections were used in the field research to collect especially socio-economic data and hygienic practices of the vendors, analysed with SPSS version 23. 200 female migrant street food vendors in Tangerang with an average age of 42.58 years were included. 87.5% were married, 35% had completed secondary school. Out of 96 food vendors in Hat Yai, the average age of vendors was 40.35 years. Most of them had completed senior high school, 66.7% were married. Most vendors were found to be operating their business 2012 to 2017, 42% in Tangerang, 42.7% in Hat Yai. In most cases, vendors in both cities worked more between eight to fourteen hours a day including selling time and preparing time. 71.9% vendors in Tangerang and 74.3% in Hat Yai declared that their gross income a day was between one and three times the minimum wage. Tangerang's vendors had free access to water with 43%, toilets with 44%, electricity with 12%, rubbish removal with 37%. In Hat Yai, 72.9% of the vendors had free access to toilets, 67.7% to garbage collection, 16.7% to electricity, 57.3% to running water. The study discloses the socioeconomic importance of the street food sector and the relatively satisfactory hygienic conditions of most street food vendor operations. Nevertheless improvements are necessary for food hygiene.

April 9, 2019 (Tuesday)

Time: 08:40~17:40

8 presentations

K2049 A Presentation 5

Comparison of the structural characterization and antioxidant activities of the polysaccharides sourced from the two different Flammulina velutipes strains by fractional precipitation. Yu-Ning Hu, **Yung-Kai Lin**, Chun-Hsu Cho, Tzi Jung Sung, Kai-Lun Liu, Chang-Wei Hsieh National Chung Hsing University, Taichung City, Taiwan

Abstract- Flammulina velutipes, one of the main edible mushroom, has long been recognized for its anti-tumor, immunomodulatory, and anticancer activities. It can be divided into two strains, the native species and the improved species, according to the color of the fruiting body. But there has yet to be a detailed study on the correlation between two strains of F. velutipes. This study focused in finding the best antioxidant fractions by fractional precipitation method and elucidate the differences of physicochemical properties and antioxidant abilities of the extracts between two strains of F. velutipes and in a bid to clarify how these disparities influences the antioxidant activities of the extracts. Two strains of F. velutipes polysaccharides were prepared by hot-water extraction method and purified by fractional precipitation (40%, 60%, and 80%), named it as FVP-40, FVP-60, FVP-80, FVPW-40, FVPW-60, and FVPW-80. Results showed FVP-60 (59.14%) and FVPW-60 (51.64%) contain the highest sugar content of all the fractional extracts and as the ethanol concentration increased, the protein content

increased significantly but, contrarily, the amount of β -glucan decreased dramatically. FTIR

and monosaccharide analysis shed the light on that the extracts were all acid glycoprotein which mainly contains glucose, mannose and galactose. Based on DPPH radical scavenging assay and ABTS radical scavenging assay, FVP-80 and FVPW-80 had the best scavenging activity among all fractional extracts. According to the results of this study, *F. velutipes* polysaccharides by fractional precipitation had different biological activities and have the potential becoming the ingredient of skincare product.

April 9, 2019 (Tuesday)

Time: 08:40~17:40

8 presentations

K2040 A Presentation 6

Examining Local Food Procurement, Adaptive Capacity and Resilience to Environmental Change in Fort Providence, Northwest Territories, Canada

Paulina Ross

Thompson Rivers University, Kamloops, BC, Canada

Abstract- Rural Indigenous communities across northern Canada are experiencing high rates of food insecurity as a result of interconnected socio-cultural, economic and environmental challenges. The loss of traditional ecological knowledge, high costs of market foods and lack of infrastructural capacity, is creating multifaceted challenges for isolated, northern communities. Climate change is causing stress on the ability of northern Indigenous communities to acquire, access and utilize food that is culturally relevant and sustainable. This research explores local food procurement activities in the community of Fort Providence, a small Dene-M dis community located in the Northwest Territories, Canada. The objective of this research was to consult with key community members to understand the detrimental effects climate change is having on land-based food procurement and also understand the complex socio-cultural, economic and environmental challenges relating to food security. This study utilizes Indigenous Methodologies to guide all aspects of the research. Semi-structured interviews with Elders, land-users, and knowledgeable community members were utilized in order to integrate the opinions and needs of the community into this research project. Topics of land-based or alternative food procurement and their associated challenges were examined. Strategies to manage food insecurity, promote local food procurement and to create a clear picture of community perspectives in addressing barriers to adaptation, were also explored. From the viewpoint of local residents, this research identifies the barriers to local food procurement and recognizes the multifaceted challenges of food insecurity in the community. The results will inform policies that reflect the needs of local residents, address the distinct socio-cultural, economic and environmental challenges to engage in local food procurement, and support overall community resilience and adaptive capacities. This research demonstrates that local food procurement is a critical aspect to support food security initiatives, community-wide resilience and adaptive capacities to environmental change in Fort Providence, Northwest Territories, Canada.

April 9, 2019 (Tuesday)

Time: 08:40~17:40

8 presentations

K2050 A Presentation 7

Enhancing S-allyl cysteine content in garlic by physical processing Yu-Ting Chen, Yi-An Chen, **Yung-Kai Lin**, Jung-Tsung Wu, Chang-Wei Hsieh Global Research and Industry Alliance Center, National Chung Hsing University, 145 Xingda Rd., South Dist., Taichung, Taiwan

Abstract- S-allyl cysteine (SAC) has been reported to exhibit antioxidant activity, hepatoprotective effect, neuroprotective effect and anti-bladder cancer effect. Many researches focus on the pharmacological effects of SAC, but few works on increasing the SAC content. Thus, this study looks to find a way to increase the SAC content in garlic. Formation of SAC is an enzymatic reaction that γ -glutamyltransferase (γ -GTP) hydrolysis GSAC (glutamyl-S-allyl-cysteine), but this enzymatic reaction will be blocked by cell structure. Hence, this study uses ultrasound and freezing to destroy cell structure and investigates the effect of ultrasonic and freezing pretreatment on S-ally cysteine (SAC) content in garlic during heat-processing at 40°C for 15 days, and also compares the browning degree and cell structure of ultrasonic and freezing pretreatment in garlic. The results of ultrasonic pretreatment for processing different frequencies at the same time found that a frequency of 28 kHz (3.24 \pm 0.30 mg/g dry weight) has a better effect at increasing the SAC content in garlic than does 56 kHz (2.99 \pm 0.11 mg/g dry weight) after being heated at 40°C for 15 days. Processing different times at the same frequency shows that ultrasonic pretreatment at 28 kHz for 3 hours (2.51 \pm 0.22 mg/g dry weight) is significantly higher than that for 1 hour (1.83 \pm 0.29 mg/g) after being heated at 40°C for 15 days. Comparing both pretreatments, the SAC content in garlic for freezing pretreatment is significantly higher than that for ultrasonic pretreatment. However, the appearance of garlic from freezing pretreatment turns brown, while it does not under ultrasonic pretreatment. Hence, ultrasonic pretreatment has a shorter processing time and more application in the food industry because it not only enhances the SAC content in garlic, but also maintains garlic's whole appearance and original color.

April 9, 2019 (Tuesday)

Time: 08:40~17:40

8 presentations

K2010 A Presentation 8

Lycopene contents in tomato products and its effect on ACE in normal and diabetic rats **Shafika A. Zaki**, Ghada M. El-kherbawy, Aly M. Azz El-Arab, and Soria A. Hassan Cairo University, Giza, Egypt

Abstract-There has been increasing interest in the use of natural food additives and incorporation of health-promoting substances into diet. Among different foods tomato and its products appeared to be one of the richest sources of lycopene. The study aimed to quantify lycopene concentration in tomato and its products as well as assess the effect of lycopene as antioxidant on angiotensin converting enzyme (ACE) in normal and diabetic rats. Chemical analysis showed that lycopene contents of fresh tomatoes accounted to 2.62 mg/100g of fresh weight. Lycopene contents were 24.79 mg/100 g of tomato paste samples, without significant difference between 20, 22 or 28% concentrated tomato pastes collected from local markets. Lycopene content of ketchup reached 23.21mg/100g. Biological experiment included 28 adult Wistar rats categorized into four equal groups (n = 7); control (C) group, diabetic (D) group, lycopene (L) group and diabetic-lycopene (DL) group. Diabetes was induced in rats by streptozotocin (45mg/kg of the body weight). Lycopene was extracted from tomato paste and orally given (10 mg/kg/day) for 5 weeks by stomach tube. Experimental animals demonstrated insignificant difference between HbA1c% levels of C and L groups. Blood HbA1c% level was significantly decreased (p < 0.05) in DL group compared to STZ-induced diabetic rats (D group), but it did not reach the values found in healthy age-matched control rats. Rats in D group had the highest level and elevated ACE activity (p < 0.05) over those of control group (C). However, ACE activity of DL group was significantly higher than that in C group (p< 0.05), but insignificantly differed from L group that was significantly greater than ACE in C group. It could be concluded that treating diabetic rats with lycopene significantly decreased ACE activity (p < 0.05) in the DL group.

One Day Visit April 10, 2019 (Wednesday) 9:30~17:00

(Tips: Please arrive at lobby of K+K Hotels before 9:30 a.m. The following schedule is only for participants who registered the visit & tour. The following places are for references, and the final schedule should be adjusted to the actual notice.)

1. (9:30) Assemble at lobby of K+K Hotels

2. Visit Casa Batllo

Casa Batlló is a building in the center of Barcelona. It was designed by Antoni Gaud i and is considered one of his masterpieces. Like everything Gaud í designed, it is only identifiable as Modernisme or Art Nouveau in the broadest sense. The ground floor, in particular, has unusual tracery, irregular oval windows and flowing sculpted stone work. There are few straight lines, and much of the façade is decorated with a colorful mosaic made of broken ceramic tiles (trencad \hat{s}). The roof is arched and was likened to the back of a dragon or dinosaur. A common theory about the building is that the rounded feature to the left of centre, terminating at



the top in a turret and cross, represents the lance of Saint George (patron saint of Catalonia, Gaud is home), which has been plunged into the back of the dragon.

3. Visit Plaça de Catalunya



Plaça de Catalunya is a large square in central Barcelona that is generally considered to be both its city centre and the place where the old city and the 19th century-built Eixample meet. Some of the city's most important streets and avenues meet at Plaça Catalunya. The plaza occupies an area of about 50,000 square metres. It is especially known for its fountains and statues, its proximity to some of Barcelona's most popular attractions, and the flocks of pigeons that gather in the centre.

- 4. Have lunch Together
- 5. Visit Barcelona Cathedral

Barcelona Cathedral, is the Gothic cathedral and seat of the Archbishopof Barcelona, Spain. The cathedral was constructed from the thirteenth to fifteenth centuries, with the principal work done in the fourteenth century. The cathedral is dedicated to Eulalia of Barcelona, co-patron saint of Barcelona, a young virgin who, according to Catholic tradition, suffered martyrdom during Roman times in the city.



6. Visit Gothic Quarter



The Gothic Quarter is the centre of the old city of Barcelona. It stretches from La Rambla to Via Laietana, and from the Mediterranean seafront to the Ronda de Sant Pere. It is a part of Ciutat Vella district. The quarter encompasses the oldest parts of the city of Barcelona, and includes the remains of the city's Roman wall and several notable medieval landmarks.

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