1st INTERNATIONAL CONFERENCE ON FOOD SAFETY

16-18 June, 2014

from Experience to Perspectives

Programme and Abstracts

School of Biological Sciences
The University of Hong Kong

"Food or Poison"

Food safety is not only a great concern for regulatory authorities, but also a challenge to scientists.

The First International Conference on
Food Safety: from Experience to Perspectives

Organized by
The School of Biological Sciences
The University of Hong Kong
Hong Kong SAR

About the Conference

In recent decades, an aging population, changing agricultural practices, globalization of our food supply, among other factors, has created new and emerging food safety threats while traditional concerns persist. As a result, issues in food safety impact the well being of humans and, importantly, the global economy.

According to the World Health Organization (WHO), every year contaminated food contributes to billions cases of *diarrhoea* in children, resulting to more than 3 million premature deaths. In the United States, diseases caused by major pathogens alone are estimated to cost up to US $35 billion in medical costs and lost productivity every year. Closer to home, Hong Kong has periodically been exposed to imported foods such as chicken contaminated with Avian Influenza (H5N1) and coral reef fish with ciguatoxin poisonings, leading to loss of public confidence in imported food for a period of time.

The most challenging food safety issues we face are global in nature. From producers to consumers and to policy markers, food safety is everybody's concern and responsibility. To safeguard trade and support economic development, efforts need to be focused on minimize health risks from farm-to-table, to prevent outbreaks and in promoting food safety. This task requires a multi-disciplinary and collaborative approach in order to develop effective responses at all levels. Governments, industries, and consumers need to work together to ensure food safety from farm-to-table. Political commitment is indispensable and governments of all nations need to show their commitment to reform laws, establish monitoring systems, strengthen food safety regulation, and enforce strict adherence to these regulations. Food safety issue is also a great challenge to scientists. Influenced by new technologies such as nanotechnology, biotechnology, genetic engineering, animal cloning, along with the phenomenon of climate change, have resulted in increasing complex risk assessment, together with scientific uncertainties that need to be addressed.

Organized by the core members under the strategic research theme "*Food Safety and Food for Health*" of the School of Biological Sciences, the present conference aims to provide a great opportunity for scientists, students, governments, public, industries, consumers and law markers to come together to discuss food safety issues and to try to accomplish the most effective scientific solution.

The main focus of this 1st international conference will be on many of the emerging issues and the diverse aspects of food safety with special emphasis on global impacts. Specific themes include food safety and public health, food safety from farm-to-table, novel food technologies for food advancing safe food supply, food law and regulations, and international harmonization and collaboration.

China has been involved at all levels to ensure safe food for human consumption in recent years. This conference will provide a good platform for collaboration and cooperation between China and other nations in the region to tackle the challenges of food safety.

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The Governing Council of the International Union of Food Science and Technology (IUFoST) and IUFoST's global membership of food science and technology professionals congratulate the University of Hong Kong, School of Biological Sciences, for its leadership and scientific excellence in organising and hosting the First International Conference on Food Safety (ICFs) from June 16-18, 2014.

Food safety is a serious issue worldwide, and your Conference provides an important new forum in which stakeholders from across disciplines and sectors can meet to address it. Through their efforts, the ICF will contribute solutions to food safety issues, benefiting people and economies from around the world. It also provides tangible support for the University's vision for its designated Food Safety and Food for Health Emerging Strategic Research Theme: to apply a wide spectrum of novel and cost effective scientific and engineering approaches and techniques from farm to fork, to ensure food safety and protect public health.

We wish the University of Hong Kong, the School of Biological Sciences, ICFS organisers, supporters and delegates great success.

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Food Safety, Longivity Dr Jennifer Wan (Chairman of Hong Kong Food Science and Technology Assoication)

Congratulations to the 1st International Food Safety Conference in Hong Kong

Wish you all a successful event!

President, International Union of Food Science and Technology (IUFoST)
Vice President, Chinese Institute of Food Science and Technology (CIFST)
Professor and Director, CAS.SIBS-Zhejiang Gongshang University Joint Center for Food and Nutrition Research

Warm **C**ongratulations on the **O**pening of the 1st **I**nternational **C**onference on **F**ood **S**afety in **H**ong **K**ong

Steven F. Chen, PhD, AIMBE Fellow, FRSC, FIAFoST, IEAS Academician
Chair Professor & National Distinguished Expert
Associate Dean, College of Engineering, Peking University
Director, Institute for Food & Bioresource Engineering, Peking University
Director, Singapore-Peking University Research Centre for a Sustainable Low Carbon Future

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Congratulation to

the 1st International Conference on Food Safety in Hong Kong

Eirik Pettersen
Sartorius Laboratory Products & Services | Vice President Asia
Biohit China | Managing Director

Congratulations to the 1st International Food Safety Conference in Hong Kong

Wish you every success throughout the forum

Becky Cheung
Chairman of International Food Safety Association

Welcome from the President and Vice-Chancellor, The University of Hong Kong

My congratulations to the HKU School of Biological Sciences for organizing the first International Conference on Food Safety, and a warm welcome to all its participants.

Food safety is an issue that affects all nations and has a substantial impact on global health and trade in food, including the potential for creating an enormous social and economic strain on societies. The conference is therefore of national and international significance, and reflects the School's commitment and initiative in dealing with the important challenges of food safety. It will be an opportunity for experts from around the world to come together to discuss the different emerging issues of food safety, particularly in terms of global impact.

I hope the knowledge and innovative ideas that participants bring to this conference will be further developed into long-term partnerships between academics, scholars, and professionals from industries and governments. These partnerships will help transfer these breakthrough findings effectively to society so that we can all benefit from the research.

I wish you all a successful and rewarding meeting!

Professor Peter Mathieson
President and Vice-Chancellor

Welcome from the Director, School of Biological Sciences, The University of Hong Kong

Food safety has now become a very important issue worldwide, especially in China where levels of pollutants, red tide toxins and waterborne pathogens in food harvested and produced consistently exceed international health standards. As a consequence, numerous cases of food poisoning and outbreaks of epidemic diseases (especially hepatitis A and cholera) due to consumption of seafood have been reported annually, affecting thousands of people and causing great economic loss. In fact, such problems do not only pose a significant threat to public health to people in China and Hong Kong. Since China is a major food producer and exporter in the world, there is growing concern worldwide about safety of Chinese food. Indeed, the US and the EU have banned food importation from China on several occasions.

Promoting and safeguarding food safety is the responsibility of all stakeholders: government regulatory agencies, industrial and commercial sectors, academic and research institutions, professional bodies and non-governmental organizations all have different, but crucial roles to play.

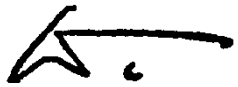
Since 2010, the School of Biological Sciences has designated "Food Safety and Food for Health" as one of our Strategic Research Areas. Last year, Food Safety has been further designated as an Emerging Strategic Research Theme of the University. It is therefore timely for us to host the 1st International Conference on "Food Safety: *from Experience to Perspectives"* at the University of Hong Kong today. It is hoped that by gathering renowned experts from around the world and working together with local scientists in the local Universities, our collective wisdom can make a useful contribution to solving this globally important problem. Our vision is to apply a wide spectrum of novel and cost effective scientific and engineering approaches and techniques from farm to fork, to ensure food safety and protect public health.

Last but not least, I wish to thank the strong support and generous sponsorship from the various organizations, including Croucher Foundation, Emerging SRT (Food), Hong Kong Food & Science Technology Association Limited, Hong Kong Nutrition Association Limited, Hong Kong Veterinary Association, International Food Safety Association, Korea Food

Research Institute, Sartorius Hong Kong Limited, The Fisheries Law Centre, The Hong Kong Medical Association and Wyeth Nutrition.

Finally, I would like to thank Dr. Wing-man Ko, Secretary for Food and Health, the Hong Kong Special Administrative Region, and Professor Peter Mathieson, President and Vice-Chancellor, the University of Hong Kong, for sparing their valuable time to officiate this opening ceremony and providing their words of wisdom and encouragement to us.

Thank you.



Professor Rudolf Wu
Director, School of Biological Sciences

A MESSAGE FROM THE ORGANIZING COMMITTEE

Welcome from the Conference Chairman

On behalf of the University of Hong Kong and the School of Biological Sciences, we take great pleasure in welcoming our distinguished guests, speakers and delegates to the 1st International Conference on Food Safety, being held at University of Hong Kong, June 16 to 18, 2014 in Hong Kong.

The University of Hong Kong is committed to promote safe food in Hong Kong, China and its neighboring countries and is aiming to be a key player in food safety related research efforts. The conference theme, "From Experience to Perspectives", reflects the interplay between the current state of knowledge and ideas and innovations that are important to assure food safety and enhance population health.

Over the three-day Conference span, a panel of distinguished guest speakers from across the world will update the attendees on recent developments and up-to date information on Food Safety related issues ranging from public health matters, new technologies to regulations, harmonization and law. As a unique addition to the Conference a special session on Food Safety Law will offer attendees an opportunity to ask questions on legal issues related to food safety regulations.

We are greatly indebted to all experts, contributors and sponsors for the generous and enthusiastic support for this Conference.

We hope that you will take time after the Conference to explore the many attraction and culinary heaven offered by dynamic Hong Kong.

Hani El-Nezami
Conference chairman

Members of the Organizing Committee

Hani El-Nezami
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Research Interest: Lipid oxidation biomarkers, antioxidant and oxidative stress in human nutrition, fatty acid metabolites and lipidomics.
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ACKNOWLEDGEMENTS

The Organizing Committee gratefully acknowledges the following for their advice to this conference:

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Peter Chan, Health Canada, Canada

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Rudolf S S Wu, Director, Chair Professor, School of Biological Sciences, The University of Hong Kong, Hong Kong

Panel Chairs

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Stephanie Ma, Honorary Professor, School of Biological Sciences, The University of Hong Kong

The Organizing Committee gratefully acknowledges the following organizations for their generous donations and supports to this conference:

Sponsored by:

Croucher Foundation

Sartorius Hong Kong Limited

Wyeth Nutrition

HKU Emerging-SRT (FOOD)

The Fisheries Law Centre

Supported by:

Hong Kong Food & Science Technology Association Limited

Hong Kong Nutrition Association Limited

Hong Kong Veterinary Association

	**International Food Safety Association**
	**Korea Food Research Institute**
	**The Hong Kong Medical Association**
	**HKU School of Professional and Continuing Education**

PROGRAMME AT A GLANCE

16 JUNE 2014 (Monday)

*Venue: **Rayson Huang Theatre**, The University of Hong Kong*

Registration and Opening Ceremony *(9:00-11:00 am**)***

Welcoming Remarks

Professor Peter Mathieson, President and Vice-Chancellor, The University of Hong Kong

Officiating Address

Dr. Ko Wing-man, BBS, JP, Secretary for Food and Health, The Hong Kong Special Administrative Region

Opening Address on behalf of the Organizing Committee

Professor Rudolf S S Wu, Director of the School of Biological Sciences
Dr. Hani El-Nezami, Chairman of the Conference Organizing Committee

Conference Reception *(5:30pm – 7:30pm)*

Poster Viewing (16th June Monday – 18th June Wednesday lunch)
Venue: Foyer of Rayson Huang Theatre, The University of Hong Kong

17 JUNE 2014 (Tuesday)

Conference Sessions *(9:00-6:00 pm)*
Venue: Rayson Huang Theatre, The University of Hong Kong

Conference Banquet *(7-10 pm)*
*Venue: Prompt, Le Meridien, Cyperport, Hong Kong (**ticket holders only**)*

18 JUNE 2014 (Wednesday)

Venue: Rayson Huang Theatre, The University of Hong Kong

Conference Sessions *(9:00 -6:00 pm)*
Selected Oral Presentation *(12:30pm -1:10pm)*
HKU e-SRT (Food) Oral and Poster Presentation Award *(5:00pm)*
Closing Ceremony *(5:15pm -6pm)*
All Conference Talks

Plenary/Keynote/Invited Lectures/Oral presentation

Venue: **Rayson Huang Theatre,** The University of Hong Kong

- All speakers are recommended to use USB Flash Disk for presentation. All available computers are PC, running Windows with Office 2010.
- All speakers are requested to submit their PowerPoint files at the Registration Desk at least an hour before the start of each session.

Selected Oral Presentations

- Each speaker will be allocated 10 minutes for presentation.

Poster Presentations

Each participant will be allocated a poster space of 140 cm × 90 cm (height × width). Poster boards will be on display in Rayson Huang Theatre at The University of Hong Kong.

Poster presenters are requested to mount their posters on 16th June 2014 between 11:00 am to 12:00 noon.

Banquet Venue

The Conference banquet will be held at Prompt Le Meridien, Cyberport (100, Cyberport Road, Cyberport, Hong Kong) on Tuesday, 17 June 2014. Transportation will be provided departing from HKU at 6:30pm to the venue.

Details of the restaurant can be found at the following website: www.hongkong.lemeridien.com

Only ticket holders can attend. If you want to join, please buy the ticket (HK$800, **cash only**) at the Registration Desk by 5:00pm on 16th June Monday.

Speakers Profile

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PLENARY SPEAKERS (PS)

KEYNOTE SPEAKERS (KS)

INVITED SPEAKERS (IS)

Plenary Speaker 1 (PS1)

Global Food Safety: Recent Crises and Lessons to be Learned

Professor Wolfgang Kneifel

Department of Food Science and Technology
University of Natural Resources and Life Sciences Vienna
("BOKU Vienna"), Austria

Prof. Wolfgang Kneifel is head of the Department of Food Science and Technology at the BOKU and Leader of the Food Safety and Quality Assurance Laboratory, the University of Natural Resources and Life Sciences Vienna. He is Director of the Christian Doppler Research Laboratory for Innovative Bran Biorefinery. He is an expert in food microbiology, hygiene, functional foods, product development, food quality assurance, quality management and food safety. He is President of the Austrian Association of Food and Biotechnologists, and an active member in about 15 professional societies.

His research interests are on: food safety, food hygiene, food and feed product development, optimisation and quality assurance of foods, quality management, biorefinery concepts and food side product valorisation, pro- and prebiotic research, microbiological quality factors of food and pharmaceutical products, food-GI tract interactions, validation of microbiological analytic methods, development and standardisation of improved analytical tools.

He holds several projects (EU-funded, international, national) and several cooperations with industry. Furthermore, he is the receiving Editor in FEMS Microbiology Letters and a member of the editorial board for 7 and reviewer for more than 20 scientific journals.

Plenary Speaker 2 (PS2)

Role of China in Global Safe Food Supply

Professor Junshi Chen

China National Centre for Food Safety Risk Assessment, China

Prof. Junshi Chen was graduated from the Beijing Medical College in 1956 and engaged in nutrition and food safety research for more than 50 years at the Institute of Nutrition and Food Safety, Chinese Centre for Disease Control and Prevention (the former Chinese Academy of Preventive Medicine), Beijing. Since 2011, he took the position of Senior Research Professor at the China National Centre for Food Safety Risk Assessment.

He has conducted large epidemiologic studies on diet, nutrition and chronic diseases, in collaboration with Dr. T. Colin Campbell, Cornell University and Prof. Richard Peto, University of Oxford since 1983. From late 1980's, he conducted a series of studies on the protective effects of tea on cancer. He is the member of the expert panel who wrote the WCRF/AICR report “Food, Nutrition and the Prevention of Cancer: a Global Perspective” (1997). Recently, he was appointed as the Chair of the Chinese National Expert Committee for Food Safety Risk Assessment and the Vice-Chair of the National Food Safety Standard Reviewing Committee. He also serves as the chairperson of the Codex Committee on Food Additives (CCFA), member of the WHO Food Safety Expert Panel and Director of ILSI (International Life Sciences Institute) Focal Point in China.

Dr. Chen's research interests focus on nutrition epidemiology and food safety surveillance and risk assessment in the following areas:

(1) Relationship between diet, nutrition and non-communicable diseases in different geographical areas and population groups in China.
(2) Food fortification.
(3) Studies on the protective effect of edible plant (tea, vegetables, fruits, etc.) components on cancer formation with special emphasis on biomarkers and human intervention trial.
(4) Total Diet Study in China.

Plenary Speaker 3 (PS3)

Antibiotic-Resistant Bacteria: a Challenge for the Food System

Dr. Hyun Jung Kim

Food Safety Research Group
Korea Food Research Institute, Korea

Dr. Hyun Jung Kim is the Head, Principal Research Scientist, Food Safety Research Group, Korea Food Research Institute, Korea. She obtained her PhD from Yonsei University, Korea. She is a Member of Advisory Committee on Food Safety Policy under the Office for Government Policy Coordination, Prime Minister's Secretariat, Korea , and a Member of Deliberative Committee on Food Hygiene under the Ministry of Food and drug Safety. She is also a Visiting Scientist of the Canadian Research Institute for Food Safety, University of Guelph, Canada. Her research areas are on: the study on risk assessment of microbiological and chemical hazard throughout food chain which include hazard identification, probabilistic risk modeling and exposure assessment; antimicrobial resistance of foodborne pathogens and their exposure to human.

Her research areas are in the study of risk assessments on microbiological and chemical hazards throughout the food chain which include hazard identification, probabilistic risk modeling and exposure assessment; antimicrobial resistance of foodborne pathogens and their exposure to human.

Keynote Speaker 1 (KS1)

Do More Regulations Mean Safer Foods?

Professor Pingfan Rao

Institute of Biotechnology, Fuzhou University, China

Professor Pingfan Rao is the President of IUFOST and Professor of Fuzhou University, China. Professor Pingfan Rao received BEng in Food technology from Fuzhou University of China in 1982, MSc in Food Science from Hiroshima University of Japan in 1986, and PhD in biochemistry from Osaka University of Japan in 1989. He has been teaching for over twenty years at Fuzhou University, and was recently appointed as the director of CAS.SIBS-Zhejiang Gongshang University Joint Center for Food and Nutrition Research, Hangzhou, China. He is actively involved in the food and biotechnology industries, was the founder and advisor of food and biotech companies, the President of the International Union of Food Science and Technology, a fellow of International Academy of Food Science and Technology and an advisor to municipal governments. He has also been the Vice President of the Chinese Institute of Food Science and Technology since 2001.

His research focuses primarily on identifying and characterizing bioactive proteins, expression and scale production of recombinant enzymes, self-assembled nanoparticles of protein derivatives as the active ingredients of tradition Chinese medicine and food, new methodology for cell separation and acupuncture meridian as a novel superoxide channels. In addition to his work in China, he is also a Distinguished Visiting Professor of the University of Ulster, UK, a supervisor of joint PhD program with the University of Edinburgh, UK and Wageningen University, Holland.

Keynote Speaker 2 (KS2)

Marine Biotoxins from Harmful Algal Blooms (habs): New Technologies and Approaches to Meet Monitoring Challenges

Dr. Don Anderson

Biology Department, Woods Hole Oceanographic Institution, USA

Dr. Don Anderson is a Senior Scientist at Woods Hole Oceanographic Institution, USA., and holds the following positions as: Director, Cooperative Institute for the North Atlantic Region (2009-present); Director, US National Office for Harmful Algal Blooms (1995-present); and Director, Coastal Ocean Institute, Woods Hole Oceanographic Institution (2004-2008). Dr. Anderson received his B.S. Mechanical Engineering, M.S. Civil Engineering and PhD Aquatic Sciences from the Massachusetts Institute of Technology, USA.

He is an active US member of the IOC Intergovernmental Panel on HABs, the ICES-IOC Working Group on Harmful Algal Bloom Dynamics, and was a lead member of the APEC working group on safeguarding free trade of toxin-free fish and shellfish products. He was a leader in the development of the first US National HAB Plan, the ECOHAB science plan, the current US national HAB plan for the next decade (HARRNESS), as well as international efforts including GEOHAB and the EU-US bilateral research effort on HABs.

He has been a tireless advocate for Harmful Algal Bloom (HAB) research for more than 25 years, safeguarding public health from algal blooms and toxic shellfish. In the US he undoubtedly is the nation's most vocal voice for HAB issues, addressing public officials, academic and federal researchers, private corporations, and policy makers for state and health organizations. He has incorporated remote sensing into his larger research programs. He was one of the first to develop antibody and DNA "probes" for HAB species and these efforts have led to the adoption of these methods to an automated detection system for Alexandrium based on the Sandwich Hybridization Assay. He has rapidly expanded use of molecular techniques for many aspects of his research and explored unique fiber-optic techniques for routine monitoring.

Keynote Speaker 3 (KS3)

Towards Safe Manufacture of Algal Health Foods: Technological Considerations

Professor Steven Feng Chen

Institute for Food & Bioresource Engineering and College of Engineering, Peking University, Beijing, China

Professor Steven Feng Chen obtained his B.Sc., Microbiological Engineering, from South China Institute of Technology and M.Eng.Sc., Biochemical Engineering and Ph.D., Food & Biological Engineering from University of Queensland.

In 2010, he received the Plenary award of the American Institute of Chemical Engineers and the "National Thousand Talents Programme" award in 2009. He was elected Fellow of American Institute for Medical and Biological Engineering (AIMBE) in 2009.

Professor Chen is the Associate Editor of "Food & Function" and an editorial board member of the" Process Biochemistry", "Journal of Applied Phycology" and "Biotechnology Letters".

Professor Chen's research interests are on: Microalgal Biotechnology, Functional Food, Bioresource Engineering, Biomolecular Engineering

His research focuses on the development of biological processes for the production of functional food and bioenergy by microalgae. In particular, Professor Chen is interested in the understanding of the molecular mechanism of heterotrophic biosynthesis of microalgal metabolites (either primary or secondary), which may lead to a controllable process for manufacturing algal products on a large scale. In addition, the Chen laboratory is interested in natural products development as well as novel fermentation technologies and their underlying principles.

Keynote Speaker 4 (KS4)

New Food Technologies - Curse or Blessing

Professor Ralf Greiner

Department of Food Technology and Bioprocess Engineering, Max Rubner-Institut, Federal Research Institute of Nutrition and Food, Karlsruhe, Germany

Professor Ralf Greiner is the Head, Department of Food Technology & Bioprocess Engineering at Max Rubner-Institut, Federal Research Institute of Nutrition and Food, Karlsruhe, Germany

He graduated from the University of Stuttgart and was Deputy Head of the Centre for Molecular Biology, Federal Research Centre for Nutrition (and Food), Karlsruhe (1990-2008).

His research interests are on: reduction of anti-nutrients in plant-based foods using enzymes; purification, characterization, over-expression and application of phytate-degrading enzymes; development of qualitative and quantitative DNA-based detection methods for genetically modified food, feed and seeds and food-borne pathogens; food nanotechnology, establishment of detection and characterization methods for engineered nanomaterials in food, migration of engineered nanomaterials from food contact materials into food, improved bioavailability by size reduction or encapsulation; non-thermal preservation techniques for food and waste reduction in food processing and distribution.

Keynote Speaker 5 (KS5)

Food Safety Inspections: Operational Implementation of European Legislation by the French Competent Authority

Dr. Thomas Pavie

Ministry of Agriculture, Food-Industry and Forestry of France / Economic Service for the North East Asian Region, French Embassy in Beijing, China

Dr. Thomas PAVIE is Deputy Agriculture Counselor for North Asia at the French Embassy in China since 2011. He handles regulatory and sanitary issues and is a key negotiator in bilateral market access and cooperation agreements between French Ministry of Agriculture, Food and Forestry and a range of government agencies with responsibility for agricultural, agro-food and food safety matters.

Dr. Pavie received his doctorate in Veterinary Medicine at the National Veterinary School of Toulouse, France and MSc of Veterinary Public Health at the National High School for Veterinary Services, Ecole Nationale des Services Vétérinaires – ENSV, OIE collaborative center.

He has 20 years of extensive field and regulatory experience, both in private sector (feed, poultry industry) and in French veterinary services. Since 2005, he has been part of the SPS team at the French Ministry of agriculture, agro-food industry and forestry.

His research interests are: Public policy on food safety and SPS issues.

Keynote Speaker 6 (KS6)

Harmonization of Pesticides Maximum Residue Limits: Issues/Challenges/Solutions

Dr. Peter Chan

Pest Management Regulatory Agency at Health Canada, Canada

Dr. Peter Chan is the Director General, of the Pest Management Regulatory Agency at Health Canada, Canada. Dr. Chan obtained his Master degree in Zoology/Medical Genetics and a Doctoral degree specialized in the area of chemistry, toxicology and pharmacology from the University of British Columbia.

In 1988, he joined the former Bureau of Drug Research as a Research Fellow on an NSERC Fellowship where he began his career in Health Canada. Since then, Dr. Chan had worked in different capacities within Health Canada. In February of 2000, Dr. Chan was appointed as the Director of the Bureau of Product Review and Assessment of the newly created Office of Natural Health Products, now the Natural Health Products Directorate. In November 2006, Dr. Chan was appointed as the Director General, Health Evaluation Directorate, of the Pest Management Regulatory Agency of Health Canada.

He has extensive experience in human health risk assessment on therapeutic products, natural health products and pesticides. Dr. Chan has written and has been a coauthor of more than 30 scientific publications. He is currently the Head of the Canadian Delegation to the Codex Committee Pesticide Residues. He has also served as a peer reviewer in various scientific journals.

Keynote Speaker 7 (KS7)

Why It Is a Bad Idea to Poison Your Customers

Mr. William D. Marler, Esq

Marler Clark LLP PS, The Food Safety Law Firm, USA

An accomplished personal injury lawyer and national expert in food borne illness litigation, William Marler has been a major force in food safety policy in the United States and abroad. He and his partners at Marler Clark have represented thousands of individuals in claims against food companies whose contaminated products have caused serious injury and death. His advocacy for better food regulation has led to invitations to address local, national, and international gatherings on food safety, including recent testimony to US Congress Committee on Energy and Commerce.

William Marler began litigating foodborne illness cases in 1993, handling the seriously injured survivors of the landmark Jack in the Box E. coli O157:H7 outbreak. Since then, Marler has represented victims of every large foodborne illness outbreak in the United States against such companies as Wholesale Club, Chili's, Chi-Chi's, ConAgra, Dole, Excel, Golden Corral, KFC, Sheetz, Sizzler, Supervalu, and Wendy's, securing over 500 million dollars for his clients.

In 2010, Bill Marler was awarded the NSF food Safety Leadership award for Education. He has the top rating from Martindale, is voted a Superlawyer every year, and has been voted into Best Lawyers in America. He received the Public Justice Award from the Washington State Trial Lawyers Association, Outstanding Lawyer Award from his bar association, and has been in the Bar Register of Preeminent Attorneys every year since 2002.

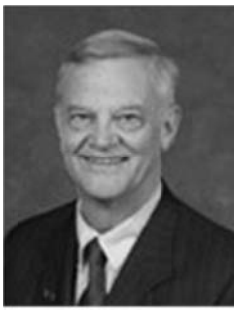
Bill Marler is the publisher of the highly regarded Food Safety News, and his award-winning blog, Marler Blog, is read by over 1,000,000 people around the world every year. In 1998, Mr. Marler formed the not for profit, Outbreak Inc. under its auspices, he spends much of the year speaking on how to prevent foodborne illnesses.

Keynote Speaker 8 (KS8)

Current Food Law in Historical Context

Mr. Peter Barton Hutt

Covington & Burling LLP,USA



Peter Barton Hutt is a senior counsel in the Washington, DC law firm of Covington & Burling, specializing in Food and Drug Law. From 1971 to 1975 he was Chief Counsel for the Food and Drug Administration. Since 1994, Mr. Hutt has taught a full course on Food and Drug Law at Harvard Law School. He is the co-author of Food and Drug Law: Cases and Materials (3d edition 2007) and has published more than 175 book chapters and articles on Food and Drug Law and on health policy.

Mr. Hutt has represented the national trade associations for the food, prescription drug, nonprescription drug, dietary supplement, and cosmetic industries. While at FDA he drafted the legislation that became the Medical Device Amendments of 1976, and in 1962 he participated in the drafting of most of the major legislation amending the Federal Food, Drug, and Cosmetic Act.

Mr. Hutt has been a member of the Institute of Medicine of the National Academy of Sciences since 1971. He recently served as a member of the Working Group on Innovation in Drug Development and Evaluation for President Obama's Council of Advisors on Science and Technology (PCAST). Mr. Hutt served on the Science Review Subcommittee of the FDA Science. He also recently served on the Panel on the Administrative Restructuring of the National Institutes of Health. He was a member of the New Foods Panel of the White House Conference on Food. Mr. Hutt has twice been a councilor of the Society for Risk Analysis and has served as Legal Counsel to the Society as well as the American College of Toxicology.

In 2005, he was presented the Distinguished Alumni Award by FDA and also bestowed the Lifetime Achievement Award for research advocacy by the Foundation for Biomedical Research. The Best Lawyers in America selected Mr. Hutt as the 2013 FDA Lawyer of the Year for Washington, DC.

Invited Speaker 1 (IS1)

A Step Forward in Food Safety Risk Assessment – the First Hong Kong Total Diet Study

Dr. Ying Xiao

Centre for Food Safety, Food and Environmental Hygiene Department, Hong Kong SAR

Dr. Ying Xiao is the food safety officer at the Centre for Food Safety, Food & Environmental Hygiene Department, Hong Kong.

Dr. Xiao obtained her BM at the Peking Medical University and PhD at the Chinese University of Hong Kong.

She worked at the Institute of Nutrition and Food Hygiene, China National Centre for Disease Control and Prevention; National Centre for Toxicological Research, US Food and Drug Administration; and School of Public Health, Peking University. She has joined the Centre for Food Safety since 2007.

Dr. Xiao's research interests are on food safety risk assessment, toxicological and toxicokinetics evaluation for pesticides and mycotoxins and other chemicals in food. She is also interested in the relationship between nutrition and chronic diseases.

Invited Speaker 2 (IS2)

Human Metabolic Phenotyping and Exposomes

Professor Ching Wan Lam

Department of Pathology, The University of Hong Kong, Hong Kong SAR

Professor Lam obtained his MBChB from The Chinese University of Hong Kong in 1991 and FRCPA in 1997 from The Royal College of Pathologists of Australasia with a double scope of practice in Chemical Pathology and Genetics. He is a Fellow of The Australasian Association of Clinical Biochemists. He obtained his PhD in 2000 from The Chinese University of Hong Kong and obtained FRCP (Glas) from The Royal College of Physicians and Surgeons of Glasgow in 2012.

Professor Ching-Wan Lam is an academic chemical pathologist and toxicologist with research interest in toxico-metabolomics of human diseases. He is also interested in translating various analytical techniques, such mass spectrometry and nuclear magnetic resonance spectrometry for clinical research. Professor Lam has defined human exposure threshold during the melamine episode and gave expert advices through international media about cancer risk of the victims of the Fukushima nuclear disaster.

Professor Lam is the corresponding co-convener of The Emerging Strategic Research Theme on Food (eSRT Food). The 30 core members of eSRT (Food) are not only active researchers, excellent teachers in the science, medical science and engineering areas, but also are consultants/technical experts to the Hong Kong government and private sectors. The long-term goal is to use biological, chemical, physical, toxicological, clinical and epidemiological approaches to enhance food safety and quality, elucidate the health benefits of certain food components, link research in food with medical sciences, and map food contaminants and novel toxins and toxicants with human disease formation and sub-optimal health.

Invited Speaker 3 (IS3)

Safety and Health Hazards of Some Local Traditional Food Items

Professor Peter Cheung

School of Life Sciences/Food & Nutritional Science Program, The Chinese University of Hong Kong, Hong Kong SAR

Professor Peter Cheung obtained his PhD from the University of New South Wales in Australia and is the Associate Director of the Food and Nutritional Sciences Programme in the School of Life Sciences at the Chinese University of Hong Kong.

He is also the editorial board member of the International Journal of Medicinal Mushrooms, Journal of Agricultural and Food Chemistry, and Journal of Food Composition and Analysis. Professor Cheung is the current vice-chairman of the International Food Safety Association. He has also served previously in the Expert Committee on Food Safety in the Centre for Food Safety of the Hong Kong SAR Government. He was the past chairman of the Hong Kong Food Science and Technology Association.

Professor Cheung's research is focused on the structure and function of dietary fiber. He has particular interest in the chemical structure and biological functions of plant and fungal polysaccharides, especially their antitumor and immunomodulatory as well as prebiotic activities. He is the associate editor of the Food Carbohydrates and Dietary Fiber.

Invited Speaker 4 (IS4)

Nutrients, Supplements Safety and Toxicity

Dr. Edmund T.S. Li

School of Biological Sciences, The University of Hong Kong, Hong Kong SAR

Dr. Edmund Li is an Associate Professor of Nutritional Science at the University of Hong Kong. He obtained his BSc Food Science, MSc and PhD in nutrition at the University of Toronto.

He was Assistant Professor, Department of Nutritional Sciences, University of Toronto (1986-1992) and joined the Department of Zoology, University of Hong Kong in 1993 and held the position as Head of department between 2003-2007.

Dr. Li is an active member of the Hong Kong Nutrition Association, the Canadian Society for Nutritional Sciences and the American Society for Nutrition. He also serves as member in Hong Kong government consultative bodies and as advisor/consultant to local and international food and beverage manufacturers.

Dr. Li's main research interest is to examine the molecular targets of dietary bioactive components. Through supplementing extract of green tea or Momordica charantia (bitter melon) to rat during gestation and lactation, he examines the potential of altering disease risk in offspring through developmental (fetal) programming.

Invited Speaker 5 (IS5)

Use of Nest Generation Sequencing to Track Foodborne Pathogens

Professor Frederick C.C. Leung

School of Biological Sciences, The University of Hong Kong, Hong Kong SAR

Frederick Leung is a professor in Molecular Biotechnology at the School of Biological Sciences, The University of Hong Kong. He obtained his BA (1974) and PhD (1978) from UC Berkeley. He worked for Merck & Co. 1980-1985, and US Department of Energy, Pacific Northwest National Laboratory, 1985-1994. He returned to Hong Kong to work for The University of Hong Kong in 1994 until now. He was elected two terms as Dean in the Faculty of Science and he is active in curriculum reform in HKU as well as secondary school science education in HK. He received the Key Contributors Award by Pacific Northwest National Laboratory, Department of Energy, United States of America (1995), Outstanding Research Supervisor's Award, HKU (2002), University Teaching Fellow Award, HKU (2006) and elected as AAAS (Science) Fellow in 2009. He has published over 180 ISI Scientific journal papers, over 250 conference abstracts and trained over 50 M.Phil and PhD students.

One of his research areas is to apply DNA sequencing platform technology to study viruses and bacteria evolution specifically in the understanding of species crossing events as well as virus and bacteria virulence.

Invited Speaker 6 (IS6)

Food Safety Issues in China

Professor Harold Corke

School of Biological Sciences, The University of Hong Kong, Hong Kong SAR

Professor Harold Corke is a Professor in the Food and Nutritional Sciences program at the University of Hong Kong. Prior to coming to Hong Kong, he was a postdoctoral researcher at the University of California in Davis. His educational background is quite diverse. He obtained a BSc degree at the University of Rhodesia (now called Zimbabwe) from 1974-1977. His major was in crop science and genetics. In 1981 he went to the University of Guelph in Ontario for an MSc degree in crop science. Then in 1984 he went to Israel, to the Weizmann Institute of Science where he obtained a PhD degree in plant genetics. He also hold an MBA degree from the University of Western Ontario (http://www.ivey.uwo.ca/ ranked 18th in the world for MBA programs by Financial Times).
He is also currently Chutian Scholar Distinguished Foreign Professor at Hubei University of Technology, where he has students working on food safety in packaging systems related to supply chain management

His PhD research was on the quality of cereal proteins, enabling the beginning of a conceptual shift towards Food Science more than Agriculture, although of course, they are both closely related. In California, he worked mostly on proteins related to bread baking quality.
In Hong Kong, thanks in large part to the talented postgraduate students (21 PhD and 6 MPhil graduates since 1997), postdoctoral researchers, and visiting scientists in his lab during the last 20 years, his group has produced about 180 papers in international journals on various aspects of food science, with a theme of plant genetic resources for food quality improvement. A lot of the work is on starch, but some has been on colorants, antioxidants, and proteins.
His research interests are on: new materials and processes for safe high quality food; starch modification for control of texture; sensory perception of texture and antioxidants for health and antimicrobial effects.

Invited Speaker 7 (IS7)

Food Safety Starts from Culture

Ms. Becky Cheung

International Food Safety Association, Hong Kong SAR

Ms. Cheung obtained her BSc degree from the University of Westminster, UK and DMS from the University of Central London.

Ms. Cheung is the Chairman of International Food Safety Association and part time lecturer at The University of Hong Kong, Chinese University of Hong Kong and The Polytechnic University of Hong Kong. She is a member of the Fellow of Royal Society of Health, UK and a Registered trainer with The Chartered Institute of Environmental Health (CIEH) since 1991. She was Chairman (2002 – 2003) of the Hong Kong Food Science & Technology Association and is also the Food Safety Consultant of Hong Kong Catering Management Association.

She is the Technical Expert for JASANZ (Joint Accreditation of Australia and New Zealand) and Food Safety trainer for Hong Kong Food & Environmental Health Department and Registered Trainer with CIEH since 1991. She has been the CEO of Best Key Consultants since 2005 and has held positions as Plant Manager of Pillsbury (1997 – 2004), QA Manager of Lee Kam Kee (1994 – 1997), Technical Manager of St. Ivel (UK) (1987 – 1991) and QA Manager of Keyons Bakery (UK) (1986 – 1987).

Her research interest focuses on the study on Food Safety Management system. She has published a book on "How to implement food safety management system at various food industries in Hong Kong"

Invited Speaker 8 (IS8)

Organotin Contamination in Seafood and its Implication for Human Health Risk in Hong Kong

Professor Kenneth Leung

The Swire Institute of Marine Science and School of Biological Sciences, The University of Hong Kong, Hong Kong SAR

Prof. Kenneth Leung obtained his BSc degree from University of Portsmouth, UK in 1993, and accomplished his MPhil study at City University of Hong Kong in 1996. As a recipient of the Swire's James Henry Scott PhD Scholarship, he obtained his PhD from University of Glasgow in Scotland in 2000. He was subsequently awarded the Croucher Foundation Fellowship at University of London, UK. He firstly joined the University of Hong Kong in January 2002. Currently, he is Professor of Aquatic Ecology and Toxicology at the School of Biological Sciences, HKU where he also serves as a Resident Scientist of the Swire Institute of Marine Science, and the Associate Dean (Research & Graduate Studies) at the Faculty of Science. During 2010-2012, he was the elected President for the Society of Environmental Toxicology and Chemistry (SETAC) Asia/Pacific Geographic Unit. Prof. Leung was selected as one of the "Ten Outstanding Young Persons 2010" by Junior Chamber International Hong Kong.

His research interests include aquatic ecology & biodiversity, ecotoxicology, ecological risk assessment, and ecological conservation. So far, he has already published more than 110 peer-reviewed articles on these subjects with an H-index of 27 and 2058 citations based on Google Scholar Citations. In 2010, he was awarded the "Marine Pollution Bulletin Highly Cited Author Award (2005-2009)" by Elsevier. He is a subject editor for Integrated Environmental Assessment and Management, and serves as an editorial board member for Marine Pollution Bulletin, Environmental Science and Pollution Research, Scientific Reports, Integrative Zoology and Canadian Journal of Zoology. Prof. Leung is also a member of Environment and Conservation Fund (ECF) Research Projects Vetting Sub-committee for the Hong Kong SAR Government.

Invited Speaker 9 (IS9)

Bioavailability and Toxicity of Nano- and Microencapsulated Phytochemicals

Professor Qingrong Huang

Department of Food Science, Rutgers University, USA

Qingrong Huang is Professor at the Department of Food Science, Rutgers University. Prof. Qingrong Huang obtained his BSc at Shanghai University of Science & Technology and PhD at the University of Nebraska-Lincoln.

Prof. Huang's overall research theme at Rutgers is the rational design of food nano- or micro-structure for improved quality and performance. The following is a summary of his specific research areas on food nanotechnology and biopolymer:

(a) Absorption, digestion, metabolism, and excretion (ADME) of nanostructured functional food ingredients;
(b) Multi-platform nutraceutical/drug delivery systems, such as nanoemulsions, nanodispersions, solid lipid nanoparticles, liposomes, multi-layer biopolymer nanoemulsions, protein/polysaccharide complex coacervates, biopolymer micelles, electrospun biopolymer nanofibers.

Invited Speaker 10 (IS10)

Potential of Supercritical Carbon Dioxide and Light-Emitting Diode a Novel Food Preservation Technologies

Dr. Hyun Gyun Yuk

Food Science & Technology Programme, National University of Singapore, Singapore

Dr. Hyun Gyun Yuk received his B.S. and M.S. at Department of Food Engineering, Kyungnam University (Korea) and Ph.D. from Department of Food Science and Technology, Mississippi State University, (USA). He was previously at the Department of Food Science and Human Nutrition, University of Florida and at the Food Safety Intervention Technologies Research Unit, Eastern Regional Research Center (ERRC), Agricultural Research Service (ARS) and United States Department of Agriculture (USDA).

His research focuses on:

a) Improving microbiological safety of foods including bacterial stress adaptive response and elucidating how foodborne pathogens can survive in adverse environments at the molecular and physiological levels. This research includes evaluating the survivability of foodborne pathogens adapted under various stress conditions in a simulated dynamic gastrointestinal model and stress response of Salmonella spp. and their biofilm formation (MOE).
b) Intervention and preservation technologies for enhancing food safety such as the development of methods that effectively and reliably reduce or eliminate pathogenic bacteria on raw or processed foods. Examples are the application of light-emitting diode for food preservation (A*STAR) and development of sanitizing strategy for ready-to-eat vegetables (AVA).
c) Improvement of molecular-based detection of foodborne pathogen in foods. His research projects also include developing low cost, high sensitivity, and real-time olfactory sensors to detect the level of food spoilage in an air-tight package- Molecular detection of food-borne pathogens combined with immuno-magnetic separation (MOE); Smart olfactory MEMS sensor for real time food spoilage detection (A*STAR).

Invited Speaker 11 (IS11)

Genomic Insights into an Important Exo-polysaccharide Producing Streptococcus thermophilus ASCC 1275

Professor Nagendra P. Shah

School of Biological Sciences, The University of Hong Kong, Hong Kong SAR

Nagendra Shah received BVSc and AH from Rajendra Agricultural University, India, a Master's degree in Dairy Science from South Dakota State University, USA and a Ph.D. in Food Science and Technology from University of Alberta, Canada. He became a full professor at Victoria University, Australia in 2003 and joined the University of Hong Kong in 2012.

Prof. Shah's has received several prestigious international awards for his contributions to research including the 1999 American Dairy Science Association Foundation Scholar Award, the 2003 Marschall Rhodia International Dairy Science Award, the 2008 Dairy Industry Association of Australia Loftus Hill award, the 2009 California Dairy Research Foundation William Haines International Dairy Science Award, the 2011 Australian Institute of Food Science and Technology (AIFST) Keith Farrer Award of merit and the 2013 American Dairy Science Association Distinguished Service Award. He is Fellow of the Australian Institute of Food Science and Technology.

He has served as the editor of the Journal of Food Science and Technology, ASEAN Food Journal, International Journal of Food and Nutrition and Advances in Chemical Science and associate editor of Journal of Food Science. Additionally, he is on the editorial board of International Dairy Journal and Journal of Dairy Science.

Prof. Shah has a long and intensive research career in probiotics, prebiotics and functional foods that has led to a distinguished international reputation in this area. He has published 215 research papers, 25 book chapters, and 175 conference abstracts. Additionally, he has edited 2 books on Dairy Products and Quality Control, and Probiotic and Prebiotic. He has also edited 2 special issues of the International Dairy Journal.

Invited Speaker 12 (IS12)

From Food Incidents to Health Risk and Risk Perception

Dr. Ka-Sing Leung

Department of Applied Biology and Chemical Technology, Hong Kong Polytechnic University, Hong Kong SAR

Dr. Ka-Sing Leung obtained his BSc and PhD from the University of Hong Kong. He is Chartered Chemist and a Fellow of The Royal Society of Chemistry (CChem, FRSC) and is a Certified Food Scientist (International Food Science Certification Commission).

He was Senior Chemist-in-charge of the Food Safety and Quality Group at the Government Laboratory and Senior Chemist at the Food and Environmental Hygiene Department, Hong Kong (1986-2010).

At present Dr. Leung is the Visiting Associate Professor of the Department of Applied Biology and Chemical Technology cum Associate Director of the Food Safety and Technology Research Centre, Hong Kong Polytechnic University. He is also Adviser to the Food Safety Center of the Civic and Municipal Affairs Bureau, Macau.

Dr. Leung's research interests include: food safety risk analysis, food safety risk and benefit assessment, food hygiene and HACCP system and testing and certification

Invited Speaker 13 (IS13)

Food Safety in Infant Formula

Miss. Estelita T. Serrano Alcaraz

Global Product Quality, Wyeth Nutrition, Singapore

Miss. Estelita T. Serrano Alcaraz obtained BS (cum laude) and MS in Microbiology and Chemistry, University of the Philippines.

She has more than 20 years of experience in the food and dairy industries, and was a teaching fellow for almost 10 years in the University of the Philippines.

Ms. Alcaraz oversees quality operations in the East Region (Philippines, Singapore and Suzhou) and serves as point of contact for food safety issues and the management of them.

She is responsible in driving Supplier Management projects in a globally managed system and sponsors the Analytical Methods Development and the PRC GB and Wyeth Nutrition Method collaborative Studies.

Invited Speaker 14 (IS14)

Developing Capacity for a One Health Approach to Food Safety in Asia

Dr. David C. Hall

Department of Ecosystem and Public Health, Faculty of Veterinary Medicine, University of Calgary, Canada

Dr. David C. Hall is Associate Professor (Animal Health Economics) at the Department of Ecosystem and Public Health (EPH), University of Calgary, Faculty of Veterinary Medicine.

After completing his veterinary degree at the University of Guelph (OVC '89), Dr. Hall worked in mixed animal practice in Canada and internationally. Much of his work has been related to animal production, economics, and policy, particularly bovine (dairy and beef) and more recently poultry systems. While working on his PhD in agricultural economics (Texas A&M, 2001) which focused on risk and international trade, he managed a research project in Thailand examining the economic and epidemiologic impact of adopting herd animal health programs on dairy farms.

Prior to joining UCVM, Dr. Hall spent a combination of eight years working in various capacities with the Food and Agriculture Organization of the United Nations based in Rome and Bangkok, international institutions including the World Bank and the Asian Development Bank, and the International Livestock Research Institute based in Nairobi.

Dr. Hall's research interests are on: economic impact of animal health interventions; ecohealth applications to prevention of emerging infectious diseases; one health approaches to food safety in Asia and policy support for integrated agriculture in developing countries.

Conference Programme

Monday 16th June	
09:15-10:00	**REGISTRATION**
10:00-11:00	**WELCOMING CEREMONY**
Coffee Break	
Session I	**FOOD SAFETY AND PUBLIC HEALTH** ***Chair: Professor Rudolf Wu (HKU) & Dr. Jennifer Wan (HKU)***
11:30-12:15	**Plenary 1: Global Food Safety: Recent Crises and Lessons to be Learned** *Professor Wolfgang Kneifel* *Head, Institute of Food Science* *BOKU, University of Natural Resources and Life Sciences, Austria*
12:15-13:00	**Plenary 2: Role of China in Global Safe Food Supply** *Professor Junshi Chen* *Fellow of Chinese Academy of Engineering* *Chinese Centre of Disease Control & Prevention, China*
Lunch	
Session II	**FOOD SAFETY AND HEALTH HAZARDS** ***Chair: Professor Iris Benzie (PolyU) & Dr. Kian Tan-Un (HKUSPACE)***
14:15-15:00	**Plenary 3: Antibiotic-Resistant Bacteria: a Challenge for the Food System** *Dr. Hyun Jung Kim* *Food Safety Research Group, Korea Food Research Institute, Korea*
15:00-15:30	**Invited Talk 1: A Step Forward in Food Safety Risk Assessment – the First Hong Kong Total Diet Study** *Dr. Ying Xiao* *Centre for Food Safety, Food & Environmental Hygiene Department, Hong Kong*
15:30-16:00	**Invited Talk 2: Human Metabolic Phenotyping and Exposomes** *Professor Ching Wan Lam* *Department of Pathology, The University of Hong Kong, Hong Kong*
Coffee Break/Poster	
16:30-17:00	**Invited Talk 3: Safety and Health Hazards of Some Local Traditional Food Items** *Professor Peter Cheung* *School of Life Sciences, The Chinese University of Hong Kong, Hong Kong*
17:00-17:30	**Invited Talk 4: Nutrients, Supplements Safety and Toxicity** *Dr. Edmund Li* *School of Biological Sciences, The University of Hong Kong, Hong Kong*
17:30-19:30	***CONFERENCE RECEPTION*** ***Rayson Huang Theatre, HKU***

Tuesday 17th June	
Session III	**FOOD SAFETY FROM FARM TO TABLE** ***Chair: Professor Frederick C.C. Leung (HKU) & Dr. Hani El-Nezami (HKU)***
09:00-09:45	**Keynote 1: Do More Regulations Mean Safer Foods?** *Professor Pingfan Rao* *President of IUFOST, Fuzhou University, China*
09:45-10:30	**Keynote 2: Marine Biotoxins from Harmful Algal Blooms (HABs): New Technologies and Approaches to Meet Monitoring Challenges** *Dr. Don Anderson* *Senior Scientist, Woods Hole Oceanographic Institution, USA*
Coffee Break/Poster	
11:00-11:30	**Invited Talk 5: Use of Next Generation Sequencing to Track Foodborne Pathogens** *Professor Frederick C.C. Leung* *School of Biological Sciences, The University of Hong Kong, Hong Kong*
11:30-12:00	**Invited Talk 6: Food Safety Issues in China** *Professor Harold Corke* *School of Biological Sciences, The University of Hong Kong, Hong Kong*
12:00-12:30	**Invited Talk 7: Food Safety Starts from Culture** *Ms. Becky Cheung* *International Food Safety Association, Hong Kong*
12:30-13:00	**Invited Talk 8: Organotin Contamination in Seafood and its Implication for Human Health Risk in Hong Kong** *Professor Kenneth Leung* *School of Biological Sciences, The University of Hong Kong, Hong Kong*
Lunch/Poster	
Session IV	**NEW FOOD TECHNOLOGIES: ADVANCING SAFE FOOD SUPPLY** ***Chair: Professor Mee-Len Chye (HKU) & Dr. Ming Fu Wang (HKU)***
14:00-14:45	**Keynote 3: Towards Safe Manufacture of Algal Health Foods: Technological Considerations** *Professor Steven Feng Chen* *Director, Institute for Food & Bioresource Engineering Peking University, China*
14:45-15:30	**Keynote 4: New Food Technologies - Curse or Blessing** *Professor Ralf Greiner* *Head, Dept. Food Technology & Bioprocess Engineering* *Max Rubner Institut, Karlsruhe, Germany*
15:30-16:00	**Invited Talk 9: Bioavailability and Toxicity of Nano- and Microencapsulated Phytochemicals** *Professor Qingrong Huang* *Department of Food Science, Rutgers University, USA*
Coffee Break/Poster	

16:30-17:00	**Invited Talk 10: Potential of Supercritical Carbon Dioxide and Light-Emitting Diode a Novel Food Preservation Technologies** *Dr. Hyun Gyun Yuk* *Food Science & Technology Programme, National University of Singapore, Singapore*
17:00-17:30	**Invited Talk 11: Genomic Insights into an Important Exo-polysaccharide Producing *Streptococcus thermophilus* ASCC 1275** *Professor Nagendra P. Shah* *School of Biological Sciences, The University of Hong Kong, Hong Kong*
Session V 17:30-18:15	**PANEL DISCUSSION** ***Chair: Professor Steven Feng Chen (Peking University) & Professor Ching Wan Lam (HKU)***
19:00-22:00	***CONFERENCE DINNER*** ***Prompt, Le Meridien Hotel, Cyberport Hong Kong***

Wednesday 18th June	
Session VI	**GLOBAL FOOD SAFETY: INTERNATIONAL HARMONIZATION AND COLLABORATION** ***Chair: Dr. Peter Chan (PMRA, Canada) & Prof. C.Y. Ma (HKU)***
09:00-09:45	**Keynote 5: Food Safety Inspections: Operational Implementation of European Legislation by the French Competent Authority** *Dr. Thomas Pavie* *Deputy Agriculture Counsellor for North Asia at the French Embassy in China*
09:45-10:30	**Keynote 6: Harmonization of Pesticides Maximum Residue Limits: Issues/Challenges/Solutions** *Dr. Peter Chan* *Director General, Pest Management Regulatory Agency at Health Canada, Canada*
Coffee Break	
11:00-11:30	**Invited Talk 12: From Food Incidents to Health Risk and Risk Perception** *Dr. Ka-Sing Leung* *Department of Applied Biology & Chemical Technology* *The Hong Kong Polytechnic University, Hong Kong*
11:30-12:00	**Invited Talk 13: Food Safety in Infant Formula** *Miss. Estelita T. Serrano Alcaraz* *AVP, Global Product Quality, Wyeth Nutrition, Singapore*
12:00-12:30	**Invited Talk 14: Developing Capacity for a One Health Approach to Food Safety in Asia** *Dr. David C. Hall* *Faculty of Veterinary Medicine, University of Calgary, Canada*

12:30-12:40	**Oral Presentation 1: Furanic Compounds in Spealty Malts and in Different Beer styles** *Isabel Ferreira* *Universidade do Porto, Portugal*
12:40-12:50	**Oral Presentation 2: *Lactobacillus rhamnosus* GG Modulates Intestinal Barrier Function and Inflammation in BALB/C Mice Following Dietary Exposure to Deoxynivalenol and Zeralenone Through Changes in Gut Microbiota** *Murphy Wan* *The University of Hong Kong, Hong Kong*
12:50-13:00	**Oral Presentation 3: Probiotics and Polyphenols Work Synergistically to Enhance Intestinal Barrier Function** *Joe Ling* *The University of Hong Kong, Hong Kong*
13:00-13:10	**Oral Presentation 4: Consumer Concerns, Perceptions and Awareness of the Use of Additives in Processed Foods** *Balarabe Ismail* *Bayero University Kano, Nigeria*
Lunch	
Session VII	**FOOD LAW AND REGULATIONS: THE WAY FORWARD** ***Chair: Adam Soliman (FLC, Canada) & Dr. Stephanie Ma (HKU)***
14:15-15:00	**Keynote 7: Why It Is a Bad Idea to Poison Your Customers** *Mr. William D. Marler, Esq.* *Marler Clark LLP PS, The Food Safety Law Firm, USA*
15:00-15:45	**Keynote 8: Current Food Law in Historical Context** *Mr. Peter Barton Hutt* *Covington & Burling LLP, USA*
Coffee Break	
Session VIII 16:15-17:00	**PANEL DISCUSSION** ***Chair: Dr. Jennifer Wan (HKU) & Professor Peter Cheung (CUHK)***
17:00-17:15	**HKU e-SRT (Food) Oral and Poster Presentation Awards**
17:15-18:00	**CLOSING CEREMONY** ***Organizing Committee***

CUHK: The Chinese University of Hong Kong
FLC: The Fisheries Law Centre
HKU: The University of Hong Kong
HKUSPACE: HKU School of Professional and Continuing Education
PMRA: Pest Management Regulatory Agency
PolyU: The Hong Kong Polytechnic University

PROGRAMME CHANGES
Any changes of the programme will be notified on the conference noticeboard at the Rayson Huang Theatre.

ABSTRACTS

PS1

GLOBAL FOOD SAFETY: RECENT CRISES AND LESSONS TO BE LEARNED

Kneifel W

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Owing to a multitude of criteria and to ongoing regional as well as global developments, food safety has become a topic of high complexity and diversity. Furthermore, several factors, such as the growing number of outbreaks of food- and feedborne diseases, local incidents, mass production, criminal fraud, but also changing trends in nutrition and consumer food habits, have stimulated both the public awareness and the consumers´concerns about food. Somehow, this observation seems to be in contrast to the explicit trend that in industrialized countries consumers, on average and compared to earlier times, spend steadily decreasing proportions of their regular budget for food. So, is the value of food underestimated? Notwithstanding, the so-called informed consumer is not necessarily an educated consumer, as he or she often lacks sound information and specific knowledge about food. Hence, well-trained food safety experts (either in food industry or via inter/national authorities) play some important and multi-faceted role, as they not only contribute to ensure the quality and safety of food but also act in the dissemination of knowledge about food. Importantly, several internationally linked control measures as well as surveillance and alert networks have been established based on food law and official regulations and aim at protecting national markets from (potentially) contaminated, mislabelled or unhealthy food. In this context, there are several interfaces that still need to be further cross-linked and harmonized.

In this presentation, the diversity of relevant criteria defined around food safety will be illuminated from different perspectives. Special emphasis will be placed on current trends and statistics, on case scenarios and related crucial questions, on the gaps and needs of public health systems as well as on risk assessment and communication. In a synopsis, the most relevant facts determining food safety will be concisely addressed based on concepts, citations, examples and models.

PS2

THE ROLE OF CHINA IN GLOBAL SAFE FOOD SUPPLY

Chen J

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China plays important role in international food trade, in both export and import. One of the most popular saying in Chinese consumers is “what we can eat!”, which reflect their perception on the current food safety situation in China and it is very different from the conclusions of scientific assessment.

Since the implementation of the new Food Safety Law in 2009, significant progresses were made in improving food safety in China, which include: the development of national food safety surveillance system; strengthening inspection; establishment of national risk assessment system and improvement in food standard development. In addition, China is playing an active role in Codex activities.

However, the general consumers still feel that the food safety situation in China is getting worse, because food safety news are frequently seen in the media. One of the major reasons is that there are hundred millions of individual farming household and half million small food manufacturers. Therefore, a small percentage of vegetables found with pesticide residues exceeding MRLs and some processed food found with over use of food additives are inevitable. However, consumers require zero risk. In addition, food fraud is also a major concern of consumers. More importantly, proper risk communication by regulatory agencies is too weak, but the media dissemination of misleading news is very strong. Media reports have become the driving force for deciding government priorities of food safety issues and the importance of food borne illness is often ignored.

PS3

ANTIMICROBIAL-RESISTANT BACTERIA: A CHALLENGE FOR THE FOOD SYSTEM

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Antimicrobial resistance is a major global public health concern and a food safety issue worldwide as well as in Korea. When pathogens become resistant to antimicrobial agents they can pose a greater health risk resulting in potential treatment failure, loss of treatment options and increased likelihood and severity of disease. Food is a vehicle of antimicrobial resistant bacteria and/or genes to human in many ways. Antimicrobial resistant bacteria can be present in food by the use of antimicrobials during primary food production for therapeutic or growth promotion uses. Otherwise, antimicrobial resistance genes can be present in bacteria that are deliberatively introduced into food chain such as starter cultures. Many of modern food preservation processes involve the application of one or more sub-lethal stresses to microbes. Stress-adapted cells are particularly challenging to the food system because they may survive processes combining severe preservation factors. Another concern of antimicrobial resistant bacteria is ability to acquire and harbour resistance gene.

Foodborne illness associated with fresh produce has continue to increase due to the demand on the change in lifestyle. When it comes to human exposure to antimicrobial resistant bacteria, consumption of fresh produce is of concern because fresh produce frequently consumed without prior processing or preservation. As a consequence, transfer of antimicrobial resistance genes between bacteria after ingestion by humans may occur. Risk analysis is an essential tool in assessing the overall risk to human health from foodborne antimicrobial resistant microorganisms and determining appropriate risk mitigation strategies to control those risks. The purpose of the assessment of exposure to foodborne antimicrobial resistant bacteria is to identify and assess a chain of events that affect the frequency and amount of resistant microorganisms to which humans are exposed by the consumption of food for the risk management options. In the session, antimicrobial resistant bacteria with respect to food safety aspects in Korea will be discussed including the prevalence of bacteria especially on the fresh produce, ready-to-eat and livestock products and the application of risk analysis tool to assess the dietary exposure to antimicrobial resistant from the consumption of food.

KS1

DO MORE REGULATIONS MEAN SAFER FOODS?

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Regulatory approach is a common and necessary tool employed by governments all over the world in the management and supervision of food safety. Its effectiveness, however, doesn't seem to be related to either how many or how complete the regulations are. For example, steam buns, a household Chinese food of all kinds of variety, have recently become subject to regulation by the National standard. The excessive and unrealistic regulation failed to mitigate the public worry about the adulterations so frequently occurred to steam buns and ended up as a joke. On the other hand, in Jiaoxi, a tourist town in Taiwan famous for its green onion pancakes, there are more than 30 stores and vendors producing green onion pancakes of different styles, and there is no any regulation. The lack of regulations has not resulted in any problem in the quality and safety management of green onion cakes. Rather, it leads to the most diverse and elaborate product creation, making green onion cakes a magnet to attract tourists to the town. It is apparent that more regulations don't mean safer food. For food producers, consumers' appreciation and supervision is a built-in driver to secure food quality and safety. Regulations and standards which can facilitate the consumer-business interaction mechanism can enhance food safety, while those which fail to promote the interaction will not enhance food safety if not undermine it.

KS2

MARINE BIOTOXINS FROM HARMFUL ALGAL BLOOMS (HABS): NEW TECHNOLOGIES AND APPROACHES TO MEET MONITORING CHALLENGES

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Marine algal toxins are responsible for an array of human illnesses associated with consumption of contaminated shellfish and finfish, and in some cases, respiratory exposure to aerosolized toxins. In addition to their human health effects, algal toxins are responsible for extensive die-offs of fish and shellfish and have been implicated in the episodic mortalities of marine mammals, birds, and other animals dependent on the marine food web. The impacts of algal toxins are generally observed as acute intoxications, whereas the health effects of chronic exposure to low levels of algal toxins are only poorly documented and are an emerging issue.

Over the past several decades, the frequency and global distribution of harmful algal blooms (commonly called red tides or HABs) appear to have increased. This increase is of particular concern since some expansions can be attributed to human activities, such as pollution of coastal waters with sewage and agricultural fertilizers. This talk will briefly review HAB phenomena and the factors that regulate their occurrence worldwide. The diversity of marine algal toxins produced by HABs and their health effects will be presented, as well as the methods used for measuring and monitoring their presence in seafood. New approaches to management of marine resources potentially impacted by HABs will be described, including numerical modeling studies of blooms and toxin production that can be used to forecast the dynamics of outbreaks. Recent advances in novel instrumentation and approaches to toxin monitoring using in situ, robotic instrumentation will also be presented.

KS3

TOWARDS SAFE MANUFACTURE OF ALGAL HEALTH FOODS: TECHNOLOGICAL CONSIDERATIONS

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Algae have been used as food for centuries. Algae can be divided into two major categories, namely, macroalgae (or seaweeds) and microalgae. In recent years, algae have been consumed mainly as health foods because they contain large quantities of nutrients as well as functional ingredients many of which are rarely available from other food sources. The world algal health food market is estimated to be over 100 billion US dollars, and the market is growing very rapidly. In general, either macroalgae or microalgae have to be cultivated and then harvested which are further processed into a variety of health foods or functional food ingredients. At present, however, the majority of algae are still grown photoautotrophically. Consequently there are public concerns over the safe production of the end-products due to possible chemical and biological contaminations as the cultivation systems are often unclosed and unsterilized. To achieve safe production of algae as health foods, we must first design a cultivation system which can be sterilized to eliminate biological contaminants and prevent contamination from chemical sources during entire culturing. Subsequent processing needs to be carefully controlled to avoid post-harvesting contaminations. In the present talk, I will highlight the safety problems encountered in the algal food industry and discuss the measure that needs to be taken to overcome such problems.

KS4

NEW FOOD TECHNOLOGIES – CURSE OR BLESSING?

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Food technologies include selection, preservation, processing, packaging, distribution and use of food. New food technologies are described as scientific and technological developments that alter the way food is produced and processed. However, only one third of these innovations lead to clearly different consumer products. Even if the introduction of new food technologies is always strongly linked to benefits and drawbacks, modern food technologies have played and still play a pivotal role in improving the nutritional quality of food, ensuring its safety, and preventing food-borne diseases. Furthermore, higher yields have been achieved and losses during distribution and storage have been reduced. Modern food technologies have also important socio-economic implications. They, for example, facilitate and promote trade in food and they provide a far greater choice of products to the consumers. Furthermore, new food technologies are discussed in respect to providing solutions to long-term challenges in society, such as climate change and a growing world population. However, new food technologies will only deliver the required benefits if they are adopted by agriculture and the food industry and accepted by consumers.

One challenge that has been met by the introduction of new food technologies is how to reconcile the conflicting interest of agriculture, food producers, regulators and consumers. In general, the situation when introducing a new food technology can be described as follows: "Proponents claim that the new technology will revolutionize food production and provide more nutritious food. Critics raise concerns that the technology poses great risks to human health and the environment. Industry races ahead bringing applications to market and government agencies have difficulty regulating the technology." Thus, the introduction of new food technologies always provoked public concern and debate. However, the application of some technologies may be considered more controversial than others. The concerns include a lack of transparency and choice about exposure, risks to health and environment, unfair distribution of risks and benefits and a lack of socially useful applications. To cope with challenge of introducing new food technologies, they need to be carefully checked for potential adverse effects and consumer policy strategies need to be improved.

KS5

FOOD SAFETY INSPECTIONS: OPERATIONAL IMPLEMENTATION OF EUROPEAN LEGISLATION BY THE FRENCH COMPETENT AUTHORITY

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Protecting the health of humans, animals and plants at every stage of the food production process is a key public health and economic priority. The European Union's (EU's) food safety policy aims to ensure that EU citizens enjoy safe and nutritious food produced from healthy plants and animals, whilst enabling the food industry — Europe's largest manufacturing and employment sector — to operate in the best possible conditions.

The basic principles for the EU's food safety policy are defined in the EU's General Food Law, adopted in 2002. Its general objectives are to facilitate the free trading of food across all EU countries by ensuring the same high level of consumer protection in all Member States.

The EU food law covers all parts of the food chain from animal feed and food production to processing, storage, transport, import and export, as well as retail sales. This integrated approach means that all food and feed produced and sold in the EU can be traced from 'farm to fork' and that consumers are well informed on the content of their food.

The EU food law also establishes the principles for risk analysis. These stipulate how when and by whom scientific and technical assessments should be carried out in order to ensure that humans, animals and the environment are properly protected.

This common approach ensures that minimum standards apply throughout the EU. It helps EU countries to prevent and control diseases, and to tackle food and feed safety risks in a coordinated, efficient and cost-effective manner.

Thanks to these EU rules, European citizens benefit from some of the highest food safety standards in the world. Compulsory checks take place throughout the agri-food chain to ensure that plants and animals are healthy; and that food and animal feed is safe, of high quality, appropriately labelled, and meets strict EU standards.

The presentation describe how those rules are applied in France, the first agriculture and food producer of Europe, and one of the biggest exporter of agriculture and food products to North Asia and especially China. The General Directorate for Food (DGAL) of the Ministry of Agriculture, food-industry and forestry is in charge of implementation the food safety rules. The presentation will describe how Official approval and inspection of premises (food and feed) are designed and applied, and how the authorities manage risks, specially in emergencies, on the basis of an adapted regulation system.

KS6

HARMONIZATION OF PESTICIDES MAXIMUM RESIDUE LIMITS: ISSUES/CHALLENGES/SOLUTIONS

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As part of the "Healthy Eating" initiatives, consumers in the developed world are increasingly demanding for the availability of a variety of fresh fruits and vegetables throughout the year. In addition, the world is also facing the challenges of providing adequate food commodities to feed the growing population. With the globalization of food supply, the trade aspect of the food commodities is also of significant interest to the farmers, the traders and the governments.

As a result of sustaining the food supply, the use of pesticides as one of the pest management tools continues to be of significance. However, some consumers have expressed concerns regarding the safety of pesticide residues in their food supply.

One approach to ensure that pesticides are used responsibly and do not pose unacceptable risk to human health, Governments establish the Maximum Residue Limit (MRL) which represent the maximum amount of pesticide residue that might be expected to be in/on a food commodity when a pesticide is used according to approved label directions (also referred to as Good Agricultural Practice; GAP). The MRL is set for each pesticide/crop combination and is used to serve as an enforcement tool for compliance with the Country's registered pesticide label. In addition, Government bodies also use the MRL as a tool to monitor that imported food is safe for consumption.

However, because of different pest pressures in different countries and different methods of establishing MRLs, different established MRLs could cause trade disruption globally. Despite of pesticide needs to address agricultural needs, many countries have got together to explore ways to align MRLs so that commodities can still be traded between countries while protecting consumer safety.

This presentation addresses some of the challenges and presents some of the international efforts in establishing aligned MRLs to facilitate trade.

KS7

WHY IT IS A BAD IDEA TO POISON YOUR CUSTOMERS

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In a global food economy, producers, manufacturers, shippers and retailers need to work together to provide safe food for customers both home and abroad. This presentation will provide a historical framework for legal liability in the food chain and present solid reasons to avoid the mistakes that might lead to litigation. The presentation will also offer practical advise to avoid the costly implication of sickened consumers.

KS8

CURRENT FOOD LAW IN HISTORICAL CONTEXT

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Throughout recorded history, protection of the integrity of the food supply has been an essential responsibility of every civilized government. Laws were initially directed at preventing "adulteration" and "misbranding" of food. Only in the last half of the 20th Century have laws been enacted to assure that food is "safe." Under all of these laws, it has been recognized that adulteration and safety are relative, not absolute, terms. As the scientific discipline of toxicology has advanced, government agencies have recognized that regulation of food must reflect an evaluation of the degree of risk that is acceptable while maintaining a wholesome and affordable food supply. Because the balance between the risks and benefits of food regulatory policy affect the entire public, these issues have become of major interest to people throughout the world. It is thus inevitable that all governments must adopt principles of transparent action in order to maintain the confidence and respect of the public.

IS1

A STEP FORWARD IN FOOD SAFETY RISK ASSESSMENT - THE FIRST HONG KONG TOTAL DIET STUDY

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Total Diet Study (TDS) has been recognised internationally as one of the most cost effective ways to estimate dietary exposure to chemicals or nutrients. It provides the scientific basis for assessing food safety risks and facilitates risk managers to focus resources on hazards that pose the greatest risks to public health. In TDS, foods commonly consumed are purchased, prepared in a form of food normally consumed, i.e. table-ready, and then analysed for a range of substances. The analytical results on the concentration of substances in food are combined with the food consumption data to obtain the dietary exposure estimates, and they are then compared with the relevant reference values for the substances of concern to assess the associated health risk. Unlike food surveillance, TDS focuses on dietary exposures to substances across the overall diet rather than the concentration of substances in individual foods. The Centre for Food Safety (CFS) started the first Hong Kong TDS in 2010, aiming to estimate dietary exposures of the Hong Kong population and various population subgroups to a range of substances, including contaminants and nutrients. Totally eight reports, covering "dioxins and dioxin-like polychlorinated biphenyls (PCBs)", "inorganic arsenic", "polybrominated diphenyl ethers (PBDEs)", "pesticide residues", "metallic contaminants", "acrylamide", "mycotoxins" and "organochlorine pesticide residues", have been released so far. Based on the findings, advices to public and trade were formulated. The entire study will be completed in 2014.

IS2

HUMAN METABOLIC PHENOTYPING AND EXPOSOMES

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Humans are exposed to a variety of hazardous chemicals through their environment. Most of these hazardous chemicals are metabolized in the body to produce reactive intermediates, which are detoxified and excreted from the body to avoid a toxic response. In Hong Kong, there are about 400 to 600 people killed and 4000 to 5000 people hospitalized every year due to poisoning. A rising trend of mortality due to poisoning has been observed in recent years. Realizing the importance of poisoning as a public health issue, toxicological, clinical and epidemiological researches have to be conducted on human biohazard and carcinogen exposure and monitoring. For example, public concerns about the carcinogenicity of triclosan are now increasing and triclosan has been shown to be associated with muscle weakness. To this end, human metabolic phenotyping is an effective tool to investigate disease mechanism by observing changes in metabolite concentrations in various biofluids after exposure to environmental chemicals. The methodology relies on advanced bioinformatics to scrutinize information contained within mass spectrometry and high-resolution proton nuclear magnetic resonance spectral patterns to distinguish disease and non-disease groups. The identification of disease-linked environmental chemicals through metabolic phenotyping of biofluid (exposomes) and metabolome-wide association studies will facilitate the development, validation and application of novel analytical methods for assessing environmental hazards to humans.

IS3

SAFETY AND HEALTH HAZARDS OF SOME LOCAL TRADITIONAL FOOD ITEMS

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In local traditional Chinese cuisines, there are some food items that are very delicious and yet can have potential safety problems and cause health hazards if not handle properly during their preparation and storage. They include processed meat and poultry products such as duck, goose, and pork which have been roasted ("Siu-mei") and those that have been soaked in seasoning sauces ("Lo-mei"). These food items are considered as high-risk in terms of microbiological hazards. Another very popular local traditional specialty and seasonal delicacy known as "Poon choi" which involves handling numerous food ingredients in multi-step preparation procedures has also high potential food safety problems. A famous traditional cold dish made of jelly fish is very high in aluminium due to its method of preparation has also caused safety concern recently. Illegal use of additives can also be found in some traditional Chinese food items like processed meat and fish balls in the case of borax, and barbecued pork and dim sum in the case of artificial colorings. In this presentation, the safety aspect and potential health hazards of some local traditional Chinese food items are highlighted and preventive measures will be suggested.

IS4

NUTRIENTS, SUPPLEMENTS SAFETY AND TOXICITY

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Obtaining adequate amount of essential nutrients at different stages of life is critical to normal development and health maintenance. The feeling of inadequacy, however, is pervasive even in affluent societies. This sentiment has spawned the exponential use of dietary supplements (including nutrients, nutraceuticals and herbal products) worldwide. Such consumer behaviour perhaps precipitates from the views that science has not fully unveiled needs of the human body and that if something is good, more are better. When it comes to inadequate intake of essential nutrient(s), the positive benefits of targeted supplementation are well documented. However, there are upper tolerable levels for essential nutrients and beyond that toxicity might occur. By current definitions, most supplements are not essential but do carry significant physiological impacts on body functions. As they are not drugs, they can be bought over-the-counter, are often used without supervision by healthcare providers and generally regarded as safe by the lay-public. The safety concerns of supplements centre on overdose/toxicity, interactions as well as the presence of contaminants. This presentation will review the possible link between omega 3 fatty acids and prostate cancer, hepatotoxicity of herbal products, adulteration of drugs in dieting products as well as possible epigenetic effects of maternal multivitamin overdose as these issues could have significant public health implications.

IS5

USE OF NEXT GENERATION SEQUENCING TO TRACK FOODBORNE PATHOGENS

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Foodborne pathogens mainly consist of microorganisms of bacteria as well as viruses. Many of these are zoonotic in nature making tracking such microorganisms a big challenge. Traditional culturing method requires days for identification and confirmation of the bacteria. Hence, the advancement of molecular biology techniques has advanced the qPCR as the method of choice for quick identification in hrs. The ideal and definitive identification is to obtain the full genome sequences of the microorganism which the qPCR comes short since it is only detecting part of a gene and its genome. With the arrival of the bench-top Next Generation Sequencers (454Jr/Roche and MiSeq/Illumina), we have developed a cost-efficient full bacterial genome sequencing protocol where we can confidently arrive at the "gaps closing" stage where all the gaps in the bacterial genome can be closed. In my presentation, I shall present our learning experiences in the development of this protocol on how to obtain full bacterial as well as viral genome sequences using this NGS platform technology.

IS6

FOOD SAFETY ISSUES IN CHINA

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China has achieved remarkable success in providing food sufficiency for 1.3 billion people, and in managing a balance between strategic self-sufficiency for basic grains, along with a dynamic import and export trade in raw materials and processed food products. However, in such a large and complex system, some food safety problems are inevitable. Many current problems resemble those also recently reported in the West, for example heavy metal contamination of rice, and misrepresentation of species identity in meat. These are widely reported in Chinese media, and lead to renewed demands for improved regulation, regulatory enforcement, and management commitment to safety and quality. I will discuss some typical problems including a) issues of environmental contamination, b) misuse of agricultural chemicals and food additives, c) inadvertent management failures, d) deliberate fraud, including counterfeiting. Technical approaches to managing these issues will be described, including expansion of branded organic suppliers, use of DNA techniques to support product integrity assessment, and development of packaging and labeling which is more resistant to copying. Marketing opportunities for overseas agro-food producers will be discussed.

IS7

FOOD SAFETY STARTS FROM CULTURE

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There have been various global food safety incidents throughout the past thirty years, along the food chain. By reviewing the possible causes of these incidents, one can break it down into biological, physical, chemical and other hazards. It is interesting to learn that the percentage of these causes varies tremendously between developed and developing city or country.

Food Safety is a culture which needs to be developed from young. Education or training is the key to SUCCESS.

IS8

ORGANOTIN CONTAMINATION IN SEAFOOD AND ITS IMPLICATION FOR HUMAN HEALTH RISK IN HONG KONG

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Organotins (OTs), in particular tributyltin (TBT) and triphenyltin (TPT), have caused widespread adverse effects on marine organisms ever since their wide application as biocides in 1960s. For instance, TBT can induce imposex development in marine gastropods, and inhibit growth and development in oysters. A mandatory global ban on the use of OT-based antifouling systems has been enacted by International Maritime Organization to minimize their environmental impacts since September 2008. It is, therefore, anticipated that there will be a reduction of OT pollution in marine environments around the world. Our previously studies, however, showed that OT contaminations are still prevalent in Hong Kong waters. Humans can uptake OTs via consumption of contaminated seafood, and high levels of these chemicals present in our body tissues may lead to health problems. In this study, we measured the tissue concentrations of OTs (i.e., mono-BT, di-BT and TBT, mono-PT, di-PT and TPT) in 11 commonly available seafood species in Hong Kong including three gastropod, two bivalve and six fish species. The highest total OTs concentration was 2325.8 μg/kg dry weight (dw) in the tongue sole Paraplagusia blochi, while the Babylon shell Babylonia areolata also showed a considerably high amount of total OTs (1751.4 μg/kg dw). TPT was the most abundant residue among the six OTs, accounting for 56-97% of total OTs. Using the estimates of seafood consumption rate from the Centre of Food Safety and the Food and Agriculture Organization (FAO) respectively, we determined the non-cancer hazard quotients (HQs) and hazard indices (HI; i.e., summation of HQs). The highest HQ for TPT was 1.41 in *P. blochi* using the FAO estimate, while the HQs for TBT and DBT were much less than 1. HI of *P. blochi*, however, is greater than 1 indicating that it is likely to have certain risks of consuming this species as seafood. Evidently, OTs are still persistent in Hong Kong's marine environments. TPT, in particular, should be the priority pollutant of concern. Appropriate management actions should be taken to control the use and release of OTs in the region in order to safeguard the marine ecosystem and human health.

IS9

BIOAVAILABILITY AND TOXICITY OF NANO- AND MICROENCAPSULATED PHYTOCHEMICALS

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Oral delivery route is the most convenient, non-invasive, and consumer preferable means of ingesting drugs or bioactive ingredients. The citrus derived polymethoxyflavone, tangeretin (5,6,7,8,4´-pentamethoxyflavone), was widely documented as having potent biological functionalities, such as anti-inflammation, anti-proliferation, and anti-tumerigenesis. Owning to the structurally substituted methoxy groups, tangeretin is very hydrophobic and tends to crystalize at room temperature in either water or oil. The oral bioavailability of tangeretin is greatly suffered from its poor aqueous solubility. Due to the crystalline nature, the inclusion of tangeretin into the delivery system is facing great challenges when sufficient loading concentration and stabilities are required. To improve the oral bioavailability and efficacy of tangeretin, a viscoelastic emulsion system containing non-toxic food ingredients has been developed.

In present study, the ability of emulsion-based delivery system to improve the oral bioavailability of tangeretin was examined using both in vitro and in vivo models. In vitro lipolysis and gastrointestinal model (TIM-1) revealed that the emulsified tangeretin was digested considerably faster and more bioaccessible than unformulated suspension. In vivo pharmacokinetics analysis on mice again confirmed that the oral bioavailability of tangeretin in the emulsion-based system was increased by 120% compared with unformulated oil suspension. Moreover, the efficacy of tangeretin to inhibit the growth of colorectal cancer was increased when administered as emulsion formulation. Fourteen-day acute toxicity of tangeretin suspended in medium chain triglyceride (MCT) was orally administered in single dose at level of 250, 500, 1000, and 2000 mg/kg. In addition, a 30 -day sub-chronic oral toxicity study was carried out using two different oral formulations, MCT suspension and emulsion. The daily administrative dosage level for sub-chronic toxicity study was at 50 and 100 mg/kg. The result indicated that the maximum tolerated dose for tangeretin was larger than 2000 mg/kg. Emulsion-based delivery system was documented to effectively enhance the bioavailability of hydrophobic compounds but the related toxicity is not yet fully elucidated. In sub-chronic study, we especially applied tangeretin in form of emulsion to examine the change of toxicity effect when such novel delivery method was utilized. However, there was no change in suggested no-observed-adverse-effect level observed for both type of oral formulations at the highest dosing level. Overall, there was no significant clinical, chemical and histopathological change observed in both acute and sub-chronic studies. The results from this study suggest that it is safe for future oral administration of bioacitves using emulsion-based delivery systems.

IS10

POTENTIAL OF SUPERCRITICAL CARBON DIOXIDE AND LIGHT-EMITTING DIODE A NOVEL FOOD PRESERVATION TECHNOLOGIES

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Food safety is a global issue that directly affects hundreds of millions of people. The World Health Organization (WHO) calls it "one of the most widespread health problems and an important cause of reduced economic productivity". Up to one-third of the populations of developed countries are affected by foodborne illness each year, and the problem is likely to be even more widespread in developing countries. It is known that microbiological origin including pathogens or the toxins they produce accounts for more than 90% of total foodborne illnesses of known causes. Thus, research on microbial food safety is a timely and urgent topic to protect the national economic as well as the public health. To date, various food preservation technologies have been studied and developed for inactivating microorganisms in food products during processing and storage. These technologies not only ensure microbial safety but also may offer better quality products than thermal processing. The use of supercritical carbon dioxide (SCCO2) is a relatively new technology that uses a non-reactive, non-flammable, inexpensive, and environmentally safe gas at fairly low pressure. Also some studies have begun to be interested in the bactericidal effect of visible light wavelengths such as light-emitting diodes (LED) for light therapy in clinical applications, proposing the potential of LED as a new food preservation technology. In this presentation, these two newly developed technologies will be briefly reviewed in terms of bacterial inactivation mechanism as well as safety and quality of food products in order to underline the promising future of technology.

IS11

GENOMIC INSIGHTS INTO AN IMPORTANT EXO-POLYSACCHARIDE PRODUCING *STREPTOCOCCUS THERMOPHILUS* ASCC 1275

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Streptococcus thermophilus is an essential dairy starter for the manufacture of yogurt and cheese.

Whole-genome sequencing of this organism is expected to provide insights into the genetic basis of metabolic pathways for biotechnological and probiotic applications. Streptococcus thermophilus ASCC 1275, a high EPS-producing dairy starter, has shown texture-enhancing properties for yogurt and cheese. After genomic DNA extraction using CTAB/NaCl method, whole genome sequencing including one shot-gun sequencing, two extra paired-end sequencing and Sanger sequencing was performed for strain Streptococcus thermophilus ASCC 1275 to obtain estimated 10× coverage of the genome of strain ASCC 1275. The raw reads were de novo assembled using Newbler 2.7. The genome was annotated by NCBI Prokaryotic Genomes Annotation Pipeline (PGAAP) and was compared against other two sequenced strains of S. thermophilus ND03 and MN-ZLW-002. Common features shared by S. thermophilus strains, such as efficient protocooperation with Lactobacillus delbrueckii subsp. bulgaricus, lactate production, well-equipped acid tolerance and proteolytic activity may account for dairy fermentation. Specific physiological properties of ASCC 1275, such as unique EPS synthesis and assembly, folic acid biosynthesis and CRISP/Cas system against phage infection might benefit industrial fermentation processes. This study highlights that the specific biosynthesis pathway for EPS production for the strain Streptococcus thermophilus ASCC 1275.

IS12

FROM FOOD INCIDENTS TO HEALTH RISK AND RISK PERCEPTION

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With improvement in daily life, people pay increasingly more attention to their health. Food safety and quality becomes an important topical issue. Intentional or unintentional adulteration or contamination of food during production and handling may develop into a food incident of public concern. If not appropriately controlled, an incident will escalate into an emergency and even a crisis. Looking at the food incidents in the past 25 years or so, some of the incidents involved hospital treatment, while quite a number of the cases did not involve high health risks but still attracted great media coverage and public concern. In any case, the government and food trade need to act quickly to control the risk by activating contingency plan for food incident response and management, including assessing the health risk and implementing control measures. Appropriate level of protection (ALOP) forms a basis of risk control through risk analysis. As such, "safe food" means "food safe enough", but not food with zero-risk which is practicably not achievable.

A number of the food incidents had evolved into major crises having vast impact to the society. The public lost confidence in the government policy and the food supply, while the food trade suffered tangible economic loss and damage of the brand name. One of the triggers of the escalation is public's risk perception and concern that usually arouse media interest. Risk perception is a subjective view about the risk that varies with individuals and is affected by factors such as knowledge and feeling about hazard and risk, past experience, publicity by the media, and dietary and living habits. In general, public's perception is built on a zero-risk consideration. As a result, the public usually consider that any hazardous agent detected in food, no matter how low the concentration is, poses risk to health and consequently, the food is not suitable for human consumption. Apparently, there is a gap between public's risk perception and the scientific health risk which is a basis of risk management decisions. This will be a hindrance to the risk control effort made by the government and the food trade to restore public's confidence in the government policy and the food supply.

The discussion will include use of risk communication for disseminating correct hazard and risk information in response to public's perception and concern so as to avoid the public from misunderstanding of the concerned risk and control measures while getting into panic during a food incident.

IS13

PRODUCING SAFE FOOD FOR THE GLOBAL MARKET

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Food manufacturers must ensure consistent production of safe and nutritious products for its consumers. This is particularly important when target consumers come from the most vulnerable population groups - new born infants, young children, and pregnant women.

Infant formula manufacturers thus have the important responsibility of ensuring food safety and delivering the nutritive value their consumer need, as these products are the sole source of nutrition for the infant.

Production of safe food is consistently achieved through a strong food safety culture embedded into the organisation. A robust Food Safety Management Systems must continuously improve based on emerging risks, technological advancement and product innovations.

A number of Food Safety management systems exist - ISO 20000, ISO 22000, FSSC 22000, Codex Alimentarius, Global Food Safety Initiative (GSI) and Global Food Safety Regulations – all of which define criteria for meeting and ensuring consumer safety:

- Hazard & Risk identification encompassing physical, microbiological, physical, nutritional & allergenic
- Risk assessment
- Risk mitigation and risk management

Manufacturers across the globe continuously review and ensure application of these elements in their operations and processes, so that their businesses sustain the changing needs of consuming public and the challenge of operating globally.

The core element of this, in practice, is a robust HACCP plan supported by a comprehensive risk assessment which includes but is not limited to raw ingredients, supplier assessment, packaging components, manufacturing process, the environment including staff qualification and training, storage facilities, distribution channels and product use.

The key is to identify the risks and establish processes to mitigate and control these risks.

The complexity of the product portfolio, network of global ingredient supply, multiple manufacturing locations, global market and regulatory frameworks and interests of parents and health care providers can be distilled into one single operating principle:

Consumer safety is a key driver of the business.

IS14

DEVELOPING CAPACITY FOR A ONE HEALTH APPROACH TO FOOD SAFETY IN ASIA

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Recent activity in medical education in Asia for medical students and practicing health professionals alike has paid considerable attention to transdisciplinary approaches to addressing the precipitating factors of emerging infectious and zoonotic diseases. This includes training and application to address food safety concerns. Much of this activity has developed in the context of a One Health framework; that is, recognizing and addressing complexity of systems; incorporating a transdisciplinary approach to problem solving; addressing gender and social equity; using a participatory approach; developing sustainable solutions; and ensuring knowledge to action (e.g., policy formulation). This paper reports on recommendations from a research project aimed to increase capacity in One Health approaches to management of health issues in Asia including food safety.

We propose a strategy for promoting a One Health approach in research and in practice relevant to prioritized concerns relating to reducing zoonotic disease in Asia. The three main aspects of the strategy are: 1) promote transdisciplinary approaches to understanding the complexity of zoonotic disease that compromise food safety; 2) increase teaching and application of ecohealth in medical sciences and other subjects relevant to food safety; and 3) bring ecohealth and One Health approaches into health policy discussions, particularly where these discussions influence policy formulation. The first two components of this strategy are being developed and applied by several institutions in Indonesia, Thailand, and Vietnam, but implementing all three elements of the strategy faces constraints. Main constraints include limited awareness and knowledge of ecohealth and One Health, lack of willingness by all partners to engage in a transdisciplinary setting, restricted capacity to change academic curricula, rigid institutional frameworks for problem solving, and availability of funding. Suggestions for reducing these constraints include encouraging government and academic partners (particularly junior colleagues) to work more closely with industry stakeholders, including leaders or supervisors in post-training information sessions, promotion of food safety discussion forums (e.g., town hall meetings) with the intent to inform policy formulation, and encouraging the use of training tools such as policy briefs that incorporate One Health lessons.

Key words: Ecohealth, one health, food safety, zoonoses, medical education, Asia.

OS1

FURANIC COMPOUNDS IN SPEALTY MALTS AND IN DIFFERENT BEER STYLES

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Specialty malts are important ingredients for the production of several beer styles. These malts are produced by adapting the usual kilning process of pilsner malt, by varying the time and temperature of kilning or roasting that develops the characteristic flavour and colour of each specialty malt. Non-enzymatic browning reactions occur during this process. They include Maillard Reactions (MR) (sugar-amino acid) and caramelization (degradation of sugars) and are responsible for the formation of brown colours. Furanic compounds are intermediate products in MR that may occur in malt in high quantities depending on roasting conditions applied during malt drying and kilning. These compounds provide pleasant odour characteristic, such as cocoa, butter or fruity. However, furan is considered a possible human carcinogen (Group 2B) by the International Agency for Research on Cancer and there are also studies revealing the toxicity of other furanic compounds in animals and humans. Thus, the major goal of this work was the evaluation of the composition of furanic compounds of specialty malts and the composition of different beer styles. Analyses of volatile furanic compounds were performed by solid-phase microextraction (CAR-PDMS fiber) coupled to GC-MS, whereas less volatile ones were analysed by HPLC/DAD, both methodologies were previously optimized and validated. Two different batches of Pilsener, caramel, chocolate and wheat malts (n=8) were analysed. High formation of furanic compounds was observed in chocolate malt followed by caramel malt. In these malts the most abundant volatile furanic compounds (expressed as relative percentage of total peak area) were furan, 5-methyl-2-furancarboxaldehyde and 2-penthylfuran, whereas the major less volatile furanic compounds were furfural and 5-hydroxymethyl furfural, ranging between 100–5000 mg/kg. Pilsner and wheat malts presented low content furanic compounds. Analyses of 15 Pilsener beers, 1 Dunken, 2 Dark and 2 Bock, with and without alcohol, 3 Gourmet beers, 2 Bohemia, and 4 Specialty beers indicated that 5-hydroxymethyl furfural ranged between 2.04 and 8.14 mg/L and furfural was lower than 2.37 mg/L. No correlation was found with beer colour measured by L*a*b system or with beer style. These results are in agreement with previous preliminary studies that point out the decrease of furanic compounds during beer fermentation.
This work was supported by Project PP-IJUP2012-UNICER- 13.

OS2

LACTOBACILLUS RHAMNOSUS GG MODULATES INTESTINAL BARRIER FUNCTION AND INFLAMMATION IN BALB/C MICE FOLLOWING DIETARY EXPOSURE TO DEOXYNIVALENOL AND ZEARALENONE THROUGH CHANGES IN GUT MICROBIOTA

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Deoxynivalenol (DON) and zearalenone are mycotoxins produced by *Fusarium* species, which naturally co-occur in foods and feeds. The gastrointestinal tract represents the first barrier met by exogenous food/feed compounds. The purpose of the present study was to investigate the ability of *Lactobacillus rhamnosus* GG (LGG) to improve intestinal barrier functions and ameliorate inflammation in Balb/c mice (6 weeks old) fed diets containing mycotoxin mixtures (i.e. DON and ZEA) through modulation of intestinal bacterial compositions. An exposure regimen which stimulated the human exposure experience was designed. Two different protocols that vary the time-points of oral administration of LGG (1 x 10^8 CFU per day) were used to determine whether it could prevent and treat unwanted effects induced by DON (12 μg/g) and ZEA (0.5 μg/g). Chronic ingestion of DON and ZEA induced histological changes, reduced several tight junction protein gene expression such as claudin (Cldn)-1, Cldn-3, Cldn-4, Cldn-5, β-catenin (Ctnnb-1) and occludin (Ocln) in different intestinal segments accompanied by increases in plasma D-lactate and endotoxin levels. At the end of the experiment, plasma cytokine (TNF-α, IL-1β, IL-6, IFN-γ and IL-8) and serum immunoglobulin levels (IgA, IgG and IgM) were also assessed by ELISA and some of them were significantly up-regulated. Supplementation of LGG before and after DON and ZEA exposure in mice can improve, in certain extent, the intestinal barrier functions in mice following mycotoxin exposure, as shown by increased tight junction protein expression, improvement of the local intestinal immune function as well as inhibition of inflammatory responses in the intestine. These changes may be associated with changes in gut microbiota composition.

OS3

PROBIOTICS AND POLYPHENOLS WORK SYNERGISTICALLY TO ENHANCE INTESTINAL BARRIER FUNCTION

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Dietary intervention with either polyphenols or probiotics has long been used to improve gut health or palliate inflammatory bowel disease. Polyphenols are well-known for their anti-inflammatory effect to the human intestinal epithelium; and probiotics, on the other hand, are used to modulate gut immune system. While the market is rife with functional food products blending polyphenols and probiotics, hardly any study investigates their combined impact on gut health. Polyphenols could kill probiotics (antimicrobial activity), and in reverse, probiotics could break down polyphenols (biodegradation). The reciprocal interaction between polyphenols and probiotics, therefore, merits in-depth study in order to characterize their combined effects – antagonistic or synergistic – on the gut immune system. Gastrointestinal (GI) barrier plays a pivotal role in gut health, barricading the body from microbes and allergenic proteins. Any impairment of the GI barrier risks infectious, inflammatory and functional intestinal diseases. Our in vitro study revealed that a combination of probiotics and polyphenols enhances intestinal barrier function, reflected by higher transepithelial resistance and lower dextran diffusion, by synergistically upregulating a tight junction protein gene expression.

OS4

CONSUMER CONCERNS, PERCEPTIONS AND AWARENESS OF THE USE OF ADDITIVES IN PROCESSED FOODS

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There has been growing concern amongst consumers about the use of additives in processed foods. The study was undertaken to determine the level of awareness, perceptions and concerns of respondents about the use of additives in processed foods and how it affects the way that they behave when purchasing processed foods containing additives. A total of 50 respondents from the Medway area of Kent participated in face to face interviews which comprised 20 questions.

The results of the study suggested that there was a general lack of knowledge among the respondents about the functions of the commonly used additives in processed foods. The study also indicated that most respondent's concerns regarding the use of additives in processed foods were related to long term health effects which included development of allergies, hyperactivity, asthma, hay fever and cancer. Specific concerns by the majority of the respondents included the use of salt, sugar, preservatives and colouring agents in food which is viewed as something negative, and this outweighed any perceptions about the positive functions that additives can perform, including improving the safety and extending the shelf life of foods. A contradiction to this was that despite concerns about the potential negative effects only a small percentage of the respondents reported reviewing the list of additives on food labels and everyone reported buying processed foods containing additives. Findings of the study also highlights the low level of trust that some people have regarding the ability of competent authorities such as the FSA to ensure that additives are only approved for use at levels that will not affect the health of the consumer. Provision of balanced and science based information conveyed through sources trusted by consumers and more studies to understand how consumers interpret the information provided by Government and processors could be used to reduce negative perceptions and concerns about long term health effects associated with food additives.

P1

TRIHALOMETHANES IN CHLORINATED WATER USED FOR URBAN SUPPLY

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The disinfection of water by chlorine is a common practice in Portugal to provide potable water supply. Chlorine ensures inactivation of pathogenic microorganisms and control biofilm growth, thus a residual concentration throughout the distribution system, particularly at end points, is required. However, it has the disadvantage of producing disinfection by-products such as trihalomethanes (THMs) due to reactions with natural organic matter. Individual exposure to THMs in tap water can occur through ingestion, inhalation, or dermal exposure. Efforts are currently made by water suppliers and legislators to maintain the concentrations of THMs as low as reasonably achievable without compromising the effectiveness of disinfection. European regulation establishes a limit of 100 µg/L for total trihalomethanes (i.e. a group of four disinfection by-products, namely chloroform, bromoform, dibromochloromethane and bromodichloromethane. Total THMs in chlorinated water are defined as the sum of the concentrations of chloroform (TCM), bromodichloromethane (BDCM), dibromochloromethane (DBCM), and bromoform (BCM). Monitoring of trihalomethanes in distribution water from Portugal during spring to summer season was performed by solid phase microextraction coupled to gas chromatography and electron capture detector, to determine whether urban water supply is in agreement with European Regulation and investigate if the trihalomethanes content in distribution tap water follows a common pattern in close geographical areas. A great degree of variation in the concentrations of THMs in tap water was observed, although in 92.3% of the results the total THMs concentrations were above the European parametric value (100 µg/L). A similar THMs pattern (TCM>BDCM>DBCM>TBM) was observed in water supply from North and Centre, and different from South (DBCM>BDCM>TCM>TBM). The origin of raw water (surface or groundwater) seems to influence this different pattern. Therefore, the European regulations for THM should be reviewed to account for the different patterns that can be found in chlorinated water and different health risks of the four THMs.

P2

CHARACTERIZATION OF STAPHYOCOCCUS AUREUS ISOLATES FROM READY-TO-EAT FOODS IN KOREA

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Staphylococcus aureus is the most important pathogen isolated from food poisoning as well as community- and hospital-acquired infection. The enterotoxins produced by S. aureus are recognized as a leading cause of foods poisoning. Staphylococcal food poisoning (SFP) is characterized by emesis resulting from the ingestion of foods contaminated with one or more enterotoxins preformed in food by enterotoxigenic S. aureus. To investigate the antimicrobial resistance and coagulase pattern of S. aureus contaminated in foods, a total of 154 S. aureus isolates from ready-to-eat (RTE) foods were analyzed. Enterotoxin genotype and phenotype of 154 S. aureus isolates determined by reversed passive latex agglutination and multiplex PCR in previous study. Of 154 S. aureus isolates, 125 isolates (81%) were resistant to penicillin G, and 37% of penicillin resistant S. aureus isolates were multi-drug resistance. Two S. aureus isolates were was determined as methicillin resistant S. aureus (MRSA), causative organism of nosocomial infection. One MRSA isolate of enterotoxin A and H had a pattern similar to NRS 123 (SCCmec IVa) according to PFGE using smaI. Based on coagulase isotyping, the most predominant type was type IV and VII. S. aureus isolates of coagulase type IV harbored the sea gene or the seg-sei-tst gene combination, and all S. aureus isolates of coagulase type VII had the seh toxin gene. These data indicate that the enterotoxin gene profile correlates to coagulase type or antimicrobial resistance and can be used as a practical database for epidemiological purposes.

P3

A STUDY ON THE IDENTIFICATION OF FIBROUS FOREIGN MATERIAL IN FOOD

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It is very difficult to figure out foreign material in food exactly because it has various type and size. To grasp what kind of foreign material and where it has come from, various analysis method such as physical analysis, chemical analysis, biological analysis and genetic analysis can be used. Nondestructive analysis method such as X-ray fluorescence spectrometer (XRF) and fourier transform infra-red spectrometer (FT-IR) is usually applied to preserve specimen these days. Especially, it is so hard to distinguish fibrous foreign material that is generally similar and vague in differentiation. So we have tried to prepare more speedy and accurate test method.

We observed surface and transmittance image of fibrous foreign material by using microscope and identified inorganic component by using X-ray fluorescence spectrometer. We also investigated characteristic of fibrous foreign material by using analysis to melting point, combustion analysis method and solubility of organic solvent. As a result, we can set up more accurate and speedy analysis method to analyze fibrous foreign material that has been mixed before or has a possibility to be mixed. Based on this study, we can utilize it as a support data to investigate cause of mixing of unknown fibrous foreign material.

P4

A RAPID AND ECONOMIC METHOD FOR MULTIPLE MEAT SPECIES IDENTIFICATION

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In the past decade, incidences of food mislabelling or substitution had been reported all over the world, leading consumer complaints and potential impact on health, some of which have led to hospitalization. The horsemeat scandal in Europe 2013 indicated the seriousness of such commercial malpractices. Such food fraud not only increases the cost for recalling the food products, but also damages the corporate brand and erodes the public confidence. To this end, what is required is a rapid, low-cost, accurate, and convenient test for monitoring food species in the supply chain for the food manufacturers, suppliers, and the regulatory agencies. By adopting the proprietary Flow-through Hybridization, we have developed a method for simultaneously identification of multiple meat species from single food sample in one experiment. The lowest detection limit is down to 1% which is the accepted tolerance of non-target meat proposed by Food Safety Agency in England.

P5

EVALUATION OF MICROBIOLOGICAL QUALITY AND COMPOSITION OF VOLATILE COMPOUNDS IN SEASONALLY COLLECTED MILK SAMPLES

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The quality of the final food product depends on many factors, among which the bacteriological quality of the raw material used for manufacturing is essential. This greatly concerns dairy products and specifically milk used for their production. The hygienic conditions of milking have remarkable effect on the quality of milk supplies. Seasonal variation in milk quality and composition may be another issue that needs to be taken into account.

A study was conducted to determine the effect of season on milk quality and volatiles' composition. To evaluate the milk quality and composition we determined the presence of following microorganisms: Listeria spp., Staphylococcus spp., Enterococcus spp. as well as volatile compounds present in milk samples collected during summer, autumn and winter 2012. To obtain an overview of compound profiles, a principal component analysis (PCA) was carried out. Altogether 18 samples were tested. The genetic material from milk samples was obtained using a commercial DNA isolation kit, and then PCR reactions were carried out with the genus-specific and species-specific primers for bacterial identification. Volatile compounds such as: acetaldehyde, acetone, ethanol, diacetyl, acetoin, and VFAs (volatile fatty acids) ranging from C2 to C7 were analysed by headspace-gas chromatography (HS-GC).

The undertaken studies have shown that Listeria sp. was detected in all 18 (100%) samples, Staphylococcus sp. in seven samples (39%), Staphylococcus saprophyticus in 1 sample (5,5%) and Enterococcus faecium in 6 (33%) samples. Staphylococci and enterococci positive samples were closely associated with autumn season. L. monocytogenes, S. aureus, S. epidermidis, S. xylosus and E. faecalis were not detected.

The PCA analysis revealed differences in VFAs patterns. The principle components: 1 (PC1) and 2 (PC2) were defined, which explained 79% of the total variance. Acetaldehyde, ethanol, diacetyl, acetoin and following volatile fatty acids: iC5, C7 showed high negative loading coefficients (0.86, 0.95, 0.96, 0.97, 0.73, 0.84 respectively) with PC1. Acetone showed a high positive loading coefficient (0.71), short fatty acids: C2, C3 exhibited negative loading coefficients (0.92, 0.84, respectively) with PC2. Based on the case score plot three clusters were gated, among which one was unique and characterized by high amounts of acetaldehyde, ethanol, diacetyl, acetoin and following fatty acids: iC5, C7, therefore reflecting the greatest diversity of volatiles detected. Based on PCA analysis, there were differences in number and content of volatiles attributed to milk samples, but regardless of season during which milk was collected.

P6

ANTIBIOTIC RESISTANCE OF COAGULASE-NEGATIVE STAPHYLOCOCCI ISOLATED FROM READY-TO-EAT FOOD OF ANIMAL ORIGIN

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The aim of this study was to determine the prevalence and pheno- and genotypical antimicrobial resistance profile of coagulase negative staphylococci (CoNS) isolated from 146 ready-to-eat food of animal origin (cheeses, cured meats, sausages, smoked fishes). 58 strains were isolated, they were classified as S. xylosus (n=29), S. epidermidis (n=16); S. lentus (n=7); S. saprophyticus (n=4); S. hyicus (n=1) and S. simulans (n=1) by phenotypic and genotypic methods. Isolates were tested for resistance to erytromycin, clindamycin, gentamicin, cefoxitin, norfloxacin, ciprofloxacin, tetracycline, tigecycline, rifampicin, nitrofurantoin, linezolid, trimetoprim, sulphamethoxazole/trimethoprim, chloramphenicol, quinupristin/dalfopristin by the disk diffusion method. PCR was used for the detection of antibiotic resistance genes encoding: methicillin resistance – mecA; macrolide resistance – erm(B); efflux proteins tet(K) and tet(L) and ribosomal protection proteins tet(M). The analysis of results obtained in this study proves the frequent occurrence of antibiotic-resistant strains among coagulase-negative staphylococci isolated from ready-to-eat food of animal origin. All coagulase-negative staphylococci (CoNS) isolates were resistant to at least one antibiotic. Most of the isolates were resistant to cefoxitin (43,1%) followed by clindamycin (36,2%), tigecycline (24,1%), rifampicin (17,2%) and erythromycin (13,8%). Methicillin resistant staphylococci harbored mecA gene. All of the isolates phenotypic resistant to tetracycline harboured at least one tetracycline resistance determinant on which tet(M) was most frequent. 32,2% staphylococcal isolates were multidrug resistant (MDR). Although coagulase-negative staphylococci are not classical food poisoning bacteria, its presence in food could be of public health significance due to the possible spread of antibiotic resistance.

P7

DETERMINATION OF QUALITY CONTROL OF FRESH SALADS IN IBB CITY, YEMEN

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This study aims to determine the quality control of fresh salads which sold in Ibb city, Yemen in a street shops, cafeterias, and restaurants by analyzing the microbial parameters and focusing on the coliform bacteria group. Total samples determined reached to fifty samples collected randomly through standard procedure from different sources. Samples analyzing was carried out in the laboratories of Ibb university in 2013, and the results could be summarized as the following: Total bacteria count ranged from Zero to 33.9 $\times 10^4$ CFU and total coliform count ranged from Zero to 21.7 $\times$ 10^4 CFU. Meanwhile, total fungi count ranged from Zero to 12.3 $\times$ 10^2 CFU. On the other hand species of the coliforms were Enterobacter, klebsiella, E.coli and Citrobacter by percentages 24, 22, 20, and 16 %, respectively. Meanwhile, anaerobic bacterial growth in some samples were 10% and 8% of the samples were no growth has occurred.

P8

SEASONAL CHANGES IN MICROBIOLOGICAL QUALITY AND VOLATILE COMPOUNDS' COMPOSITION OF SWISS-DUTCH-TYPE CHEESE

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The quality of fermented products depends on many factors, largely on how well the microbiological quality of raw materials, process hygiene and technological processes are controlled. E.g. changes in microbiological quality of raw milk have a crucial impact on the fermentation process of ripened cheeses, causing problems with product standardization.
This research aimed at comparing microbiological quality and volatile organic compounds' (VOCs) composition of Swiss-Dutch-type cheese in relation to season during which milk was collected for its production. The study involved 18 samples of Swiss-Dutch-type cheese produced from the raw milk collected during 3 seasons: summer, autumn and winter from July to December 2012.
The genetic material of cheese samples was obtained with the use of DNA isolation kit and PCR reactions were carried out with the genus-specific and species-specific primers for bacterial identification (Listeria sp., Listeria monocytogenes, Staphylococcus sp., S. aureus, S. epidermidis, S. saprophyticus, S. xylosus, Enterococcus sp., Enterococcus faecalis, Enterococcus faecium). Following volatile compounds: acetaldehyde, acetone, ethanol, diacetyl, acetoin and volatile fatty acids ranging from C2 to C7 were analysed by headspace-gas chromatography (HS-GC) for evaluating volatiles' composition of cheese.
This research have shown that Staphylococcus sp. was detected in 7 (39%) and Enterococcus faecium in 6 (33%) cheese samples. Similarly, their presence was confirmed in raw milk (7 staphylococci positive and 6 E. faecium positive samples) from which the cheese was produced. Listeria sp., Listeria monocytogenes, S. aureus, S. saprophyticus, S. xylosus and E. faecalis were not detected.
The PCA analysis revealed differences in VOCs patterns in view of seasonal origin of the Swiss-Dutch-type cheese. To obtain an overview of compound profiles, the PC1 and PC2 were defined, which explained 91,6% of the total variance. Acetaldehyde, acetic and propionic acids showed high positive loading coefficients (0.71, 0.82, 0.82, respectively) and volatile fatty acids: C4, C5, C6, C7 exhibited high negative loading coefficients (0.80, 0.79, 0.77, 0.79, respectively) with PC1. Acetone showed a high positive loading coefficient (0.97) with PC2. Based on the case score plot, showing how the seasonal cheeses score on the volatile compounds, four clusters were obtained: 1st with high amounts of C5, C6, C7 and C4 which characterized autumn; 2nd cluster with high amounts of C4 which described summer; 3rd cluster with high content of acetaldehyde, C2 and C3 and 4th cluster with much lower share of acetaldehyde, C2 and C3 comparing to cluster 3, but both describing winter. There were clear differences between volatile compounds depending on season during which cheese was produced.

P9

FORMATION OF HETEROCYCLIC AMINES IN CHARCOAL GRILLED PORK: INHIBITION BY BEER MARINDES

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Epidemiological studies indicate that heterocyclic amines (HAs) may be associated with an increased risk of colorectal, breast, prostate, pancreatic and other cancers. HAs are particularly present in the crust of pan-fried, grilled or charcoal grilled meat and fish.

HAs formation strongly depends on the treatment temperature. Depending on this temperature, HAs can be divided in two main families. Thermic HAs, resulted by complex reactions involving creatine/creatinine, free amino acids and sugars through the Maillard reactions, at temperatures between 150 and 250 ºC. Pyrolitic HAs results from the pyrolysis of proteins or amino acids heated at higher temperatures. Both mechanism of HAs formation involves free radicals and antioxidants are considered the main mitigation strategy to reduce HAs exposure. If the antioxidants are applied via marinades has the advantage that the cooked meat, are not over spiced and do not acquire negative sensory properties.

In the present work, the HAs formation in charcoal grilled pork were evaluated and the potential inhibitory effect, as well the antiradical activity (DPPH assay), of different beers marinades (Pilsner beer, non-alcoholic Pilsner beer and Black beer coded, respectively as PB, P0B and BB) were also studied. Samples were marinated in beer four hours prior to cook. All meat samples were grilled at 15 cm distance to the heat source and temperature was around 220ºC.

In charcoal grilled pork (unmarinated) two thermic (PhIP and 4,8-DiMeIQx) and three pyrolytic HAs (Trp-P-1, AαC, MeAαC) were quantified. MeIQx, IQ, Glu-P-1 were also found but in concentrations near the detection limit. The quantitative profile in charcoal grilled pork was PhIP > Trp-P1 > 4,8-DiMeIQx > AαC > MeAαC. Concerning marinated pork beefs it was observed that all marinades caused a significant reduction (higher than 50%) on total amount of HAs. BB proved to be the most effective in the inhibition of HAs formation, reducing around 90% of the total HAs content. In relation to scavenging activity BB exhibited the strongest effect (68.0 %), followed by the P0B (36.5 %) and the PB (29.5 %) prior meat marinating and a significant reduction on the radical-scavenging activity after four hours of meat marinating was observed only for BB. A positive correlation was observed between antiradical activity and the reduction of total HAs formation.

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P10

THE EFFECT OF ZEARALENONE, A FOOD-BORNE MYCOTOXIN, ON GENE EXPRESSION PROFILE

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Zearalenone (ZEA) is a non-steroidal mycotoxin synthesized by several Fusarium species, which can be found in cereal products such as corn. Due to its similarity in structure with 17β-estradiol, ZEA binds estrogen receptors (ERs) and exerts estrogenic effect especially on cells expressing ERs. Noteworthy, lung cells express ERs which make them susceptible to ZEA toxicity. Our early studies of acute ZEA exposure on human lung epithelial cells (BEAS-2B) have shown that ZEA generates free radicals. At 24h exposure of ZEA, BEAS-2B cells undergo apoptosis via the p38 MAPK pathways. Interestingly, we observed global hypomethylation in cells treated with ZEA especially at 24h compared to non-ZEA treated cells.

The purpose of this study is to investigate the effect of ZEA on the gene expression profile of lung cells. Whole transcript microarray analysis was conducted in cells treated with 40μM ZEA for 24h and in untreated cells. Bioinformatic analysis results from the microarray were validated by qPCR.

Our results show that ZEA induces overexpression of Heat shock Proteins (HSPs) and of genes involved in the responses to oxidative stress and apoptotic pathways. We also observed the down-regulation of genes involved in cell proliferation, cell cycle arrest and in DNA replication and repair. Immunodysregulation by ZEA is characterized by down-regulation of a number of immune system-related genes such as interleukin, interferon and tumour necrotic factor (TNF) genes.

Collectively, ZEA induces a broad range of toxicity on BEAS-2B cells. Further study is required to elucidate the proposed pathways and the effects of ZEA toxicity.

P11

ANTI-ADIPOGENIC PROPERTIES OF SELECTED PHENOLICS IN 3T3-L1 CELL MODEL

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Many phenolics are known to possess anti-obesity properties through mechanisms that inhibit adipogenesis, stimulate lipolysis or induce apoptosis. This study aimed to examine the anti-adipogenic effects of two phenolics, oxyresveratrol and cyanomaclurin in 3T3-L1 preadipocytes. At doses that did not induce cytotoxicity (based on the lactate dehydrogenase assay), the exposure of oxyresveratrol (0-100μM) or cyanomaclurin (0-600μM) in the first three days of differentiation led to a dose-dependent decrease in triglyceride accumulation on day 9 post-confluent. Results of cell proliferation [3-(4,5-Dimethylthiazol-2-yl)-2,5-Diphenyltetrazolium Bromide (MTT) assay] and cell cycle [Fluorescence-activated cell sorting (FACS) analysis] studies demonstrated that both compounds inhibited differentiation through inducing cell cycle arrest by retaining the preadipocytes in the G1 phase during the first two days post-confluent. By studying the gene expression of the major transcriptional factors (Peroxisome proliferator-activated receptor γ, CCAAT/ Enhancer-binding proteins α) the regulatory pathways are identified. This research helps to identify novel agents with anti-obesity properties by provide preliminary data on their mechanism of actions.

P12

THE DYNAMIC CHANGE RULE OF TSNAS IN THE CURING COURSE OF TOBACCO

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The TSNAs(Tobacco-specific N-nitrosamines) are known to be some of the most potent carcinogens present in tobacco. With regard to fresh tobacco leaves, there is no significant difference in the content of TSNAs between burley tobacco and flue-cured tobacco, but the TSNAs of air-cured burley tobacco was 31 times that of flue-cured tobacco, the TSNAs of fresh burley tobacco leaves is very little, only about 6.75 ng/g, and same as fresh flue-cured tobacco leaves, but it was up to 5213.30 ng/g after dried, and the TSNAs of flue-cured tobacco leaves was 187.36 ng/g.

The TSNAs of different parts of flue-cured tobacco is obvious different, which of fresh upper, middle and lower leaves were 5.92 ng/g, 7.67 ng/g and 5.84 ng/g respectively, which of cured upper, middle and lower leaves were 75.93 ng/g, 178.61 ng/g and 67. 19ng/g respectively.

The results showed that the TSNAs of tobacco leaves would be decreased by changing the curing technology.

Key words: tobacco leaf; flue-curing; TSNAs; burley tobacco; flue-cured tobacco

P13

MATERNAL DISTRIBUTION, TRANSPLACENTAL TRANSFER AND POTENTIAL HARMFUL EFFECT(S) OF SILVER NANOPARTICLES

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With increasing application of silver nanoparticles (AgNP) in large variety of consumer products, such as fabrics, health supplements and food packaging materials humans are likely to be orally exposed to AgNP directly and/or indirectly through leaching of AgNP from AgNP-containing products to the environment. However, little is known about the effect when vulnerable populations, such as pregnant women and fetuses, are exposed to this popular nano-metal. The aim of this study is to investigate the maternal distribution, transplacental transfer and potential toxicity of polyvinylpyrrolidone coated-AgNP (PVP-AgNP) with the use of in vivo model. In this study, five groups of pregnant Sprague-Dawley rats were included: 1) vehicle control (1% sodium dodecyl sulfate (SDS)), 2) water, 3) 150 mg/kg/day PVP-AgNP, 4) 300mg/kg/day PVP-AgNP and 5) 600 mg/kg/day PVP-AgNP. Pregnant animals, with presence of vaginal plug assigned as gestational day (GD) 0, were dosed by oral gavage, once daily, from GD6 to GD19, and sacrificed at GD20. Maternal liver retained the highest amount of silver, followed by other maternal organs in the following descending order: kidney, blood, placenta and brain. Though no apparent toxicity was reflected from litters, detectable level of silver was measured in fetus, therefore, with these dosages of PVP-AgNP, rat fetus would be exposed to silver upon maternal oral exposure. This indicates the possibility that placenta could not effectively protect fetus from exposure to silver, and highlighted the urge to investigate the potential harm of AgNP to pregnant women and fetuses.

P14

EFFECT OF SELECTED VITAMINS ON THE LIPID PEROXIDATION AND STABILITY OF FATTY ACIDS IN BEEF PATTIES

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The inhibitory activities of fifteen vitamins against Malondialdehyde (MDA) formation were examined in beef patties samples. Solid Phase Extraction (SPE) and TBA test were performed followed by HPLC-DAD analysis. Significant differences were determined by paired t-test with $p<0.05$ comparing to control. Five vitamins (pyridoxiamine, pyridoxine, retinoic acid, α-tocopherol and L-ascorbic acid) exhibited significant inhibition (>20%) in triplicate experiments. The fatty acid profiles were examined by GC-MS and significant difference was only observed for three antioxidants (VA,VC and VE) but not PM. An alternative explanation of inhibition of lipid oxidation was proposed for pyridoxmine. It was demonstrated that pyridoxamine could directly react with Malondialdehyde via addition reaction. The reaction involved a nucleophilic attack of pyridoxamine's free amine group on one of the aldehyde functional group of Malondialdehyde and formed a new adduct. This type of reaction was also found to occur in beef patties by chromatographic and spectral analysis (LC–ESI–MS and NMR).

P15

OPTIMIZATION OF THE ENZYMATIC HDROLYSIS OF PUFFER FISH (*TAKIFUGU OBSCURUS*) MUSCLE WITH TASTE SENSING SYSTEM

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Puffer fish (*Takifugu obscurus*) were used as raw material to prepare flavor peptides by enzymatic hydrolysis. An instrumental taste-sensing system was applied to distinguish between muscle hydrolysates produced using different proteases and hydrolysis conditions, and the possible association of taste sensor outputs with human gustatory assessment. Principal component analysis of taste sensor output data categorised samples according to the proteases used for hydrolysis. High umami and sourness sensor outputs were characteristic of Protamex-produced hydrolysates, compared to low umami and saltiness while high sourness outputs of hydrolytic enzyme-produced hydrolysates, and high umami and saltiness while low sourness outputs of Flavorzyme- and neutral protease-produced hydrolysates. Results from taste-sensing system and human gustatory assessment, neutral protease was determined as optimal enzyme of puffer fish muscle. The optimal values of crucial technological parameters, including temperature, hydrolysis time and enzyme dosage, were determined by single factor analysis. Results indicated that the optimum conditions for producing polypeptide from puffer fish muscle with neutral protease were as follows: 50 ℃, 4 h, and enzyme dosage 2.5 %.

P16

AN OPTIMIZED QUECHERS METHOD FOR THE ANALYSIS OF POLYCHLORINATED BIPHENYLS IN AQUATIC TISSUES

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This paper focuses on the chemical analysis of polychlorinated biphenyls (PCBs) residues in aquatic samples, particularly on the development and application of optimized QuEChERS pretreatment method for the detection and characterization of high fat, high protein, low pigment matter. The analytical methods employed are based on the use of gas chromatography-tandem mass spectrometry (GC/MS/MS) with selected reaction monitoring (SRM) to provide a very sensitive and selective means of analyzing for the PCBs. Three analytical processes were validated in each matrix by the analysis of spiked blank samples and compared, thus the florisil 545 Celite pretreatment method was selected. Performance characteristics, such as linearity, detection limit (LOD, 6 ~ 30 ng/kg), quantitation limit (LOQ, 20 ~ 100 ng/kg), precision and recovery were studied. Recoveries and precision values were 74.0 – 123.8% and 15.7%, respectively, for the bulk majority of PCBs. LOD < 30 and LOQ < 100 ng/kg were obtained for all the target compounds with a correlation coefficient of linear regression equation between 0.9952 ~ 0.9995. The proposed analytical methodology was applied to the analysis of the PCBs in 83 samples, 10 from farm and 73 from local market. None of PCBs were detected in 83 samples, both at concentration levels lower than the LOQ values. This method is a simple, low cost method with a low sample size requirement, which is suggested.

P17

MULTILEVEL INFRARED SPECTRAL MACRO-FINGERPRINTS ANALYSIS FOR FOOD QUALITY EVALUTATION AND CONTROL

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Analysis on food products with extreme complexity are great challenges to scientists. It usually requires demanding analytical methods and high costs to obtain complete information concerning every component. On the other hand, target compounds cannot be extracted completely when separation methods are inappropriate and impurity substances may exist in mixture samples.

Based on our research in analyzing complicated food samples by infrared spectroscopy (IR) in the past decade, we developed a methodology, 'multilevel infrared spectral macro-fingerprints analysis', which is applicable to guide the application of infrared spectroscopy in complicated food analysis. This methodology is inherent with a versatile label-free analytical technique—IR— with fingerprint-like features making it not only be suitable to profile the whole food sample but also be able to detect specific components. With the help of computers and chemometrics, both qualitative and quantitative information, can be acquired. Spatial and temporal scales of food samples studied by IR can vary in a wide range. Moreover, diverse sampling techniques ensure infrared spectra of food samples in any forms can be measured simply, quickly and non-destructively. Therefore, food quality evaluation and control could be readily implemented from farm to table by employing the developed methodology.

P18

GROWTH AND ENDOCRINE DISRUPTING EFFECTS OF THE MYCOTOXINS ZEARALENONE AND AFLATOXIN B1 ON BREAST CANCER CELLS

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Zearalenone (ZEA) and aflatoxin B1 (AFB1) are secondary metabolites produced by the fungi Fusarium and Aspergillus respectively. ZEA is proven to be an estrogenic endocrine disruptor since 1950s, while AFB1 is recently found to disrupt steroidogenesis in placenta. Both mycotoxins are constant contaminants of cereals worldwide and can both be found at significant levels in human plasma/urine of people in developing countries. Due to the co-occurrence of ZEA and AFB1 in food and human samples and the possibility of endocrine disruptors to modulate the growth of hormonal dependent breast cancer, we hypothesized that exposure to ZEA and AFB1 would affect the growth and cell cycle progression of breast cancer cells by modulating gene expressions and disrupting steroidogenesis and hormone metabolism.

In the present study, the effects on growth and cell cycle progression of breast cancer cells MCF-7 after exposure to individual and combination of ZEA and AFB1 were evaluated. It was found that ZEA could significantly increase proliferation of MCF-7 with a dose dependent manner while AFB1 had an antagonistic effect. To investigate whether steroidogenesis and hormone metabolism are affected by exposure to mycotoxins, real time PCR array was performed. Expression of genes was modulated and interactions were found between exposure to ZEA and AFB1.

In summary, ZEA and AFB1 could modulate the growth and proliferation of breast cancer cell MCF-7, and exposure to these mycotoxins also affect the gene expression related to steroidogenesis and hormone metabolism in MCF-7. AFB1 always has an opposing effect to ZEA.

P19

PREPARATION OF FERULOYLATED OLIGOSACCHARIDE AND ITS ANTIOXIDANT ACTIVITY

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Different acids (oxalic acid, citric acid, acetic acid, hydrochloric acid, sulfuric acid) were used to hydrolyze maize bran to prepare feruloylated oligosaccharide, and its antioxidant activity was investigated *in vitro* using ferulic acid as a control. Among the tested acids, oxalic acid showed highest efficiency for release of feruloylated oligosaccharide from maize bran. The optimal condition for the preparation of feruloylated oligosaccharide by oxalic acid was to autoclave (121 ℃) maize bran for 20 min with 0.6% of oxalic acid in a ratio 1:10 (v/w). After purification using an Amberlite XAD-2 column, a product of feruloylated oligosaccharide with ferulic acid content of 4.48% was obtained. Its IC_{50} value for scavenging hydroxy free radical, DPPH, and superoxide anion free radical were 8.26，0.01, and 0.19 mmol/L (on the basis of ferulic acid), respectively. Its reducing power and antioxidant index were 170% and 180% of that of free ferulic acid. Thus feruloylated oligosaccharide prepared from maize bran showed higher antioxidant activity than free ferulic acid and great application potential in food science area.

P20

IDENTIFICATION AND CHARACTERIZATION OF A "BIOMARKER OF TOXICITY" FROM THE PROTEOME OF THE PARALYTIC SHELLFISH TOXIN-PRODUCING DINOFLAGELLATE *ALEXANDRIUM TAMARENSE* (DINOPHYCEAE)

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The objective of this study was to identify and characterize a "biomarker of toxicity" from the proteome of *Alexandrium tamarense*, a paralytic shellfish toxin (PST)-producing dinoflagellate. A combination of 2-DE and MS approaches was employed to identify proteins of interest in the vegetative cells of several strains of *A. tamarense* with different toxin compositions and from different geographical locations. The electrophoretic analysis of the total water-soluble proteins from these toxic strains by 2-DE showed that several abundant proteins, namely AT-T1, AT-T2 and AT-T3, differing slightly in apparent Mr and pIs, were consistently present in all toxic strains of *A. tamarense*. Further analysis by MALDI-TOF MS and N-terminal amino acid sequencing revealed that they are isoforms of the same protein. Even more intriguing is that these proteins in *A. tamarense* have similar amino acid sequences and are closely related to a "biomarker of toxicity" previously reported in *A. minutum*. Unambiguous and highly species-specific identification was later achieved by comparing the PMFs of proteins in these two species. An initial attempt to characterize these proteins by generation of murine polyclonal antibodies against the AT-T1 protein was successful. Western blot analysis using the murine AT-T1-polycolonal antibodies identified all the toxic strains of *A. tamarense* and *A. minutum*, but not the nontoxic strain of *A. tamarense*. These results indicate that these protein characteristics for toxic strains are species-specific and that they are stable properties of the tested algae which are clearly distinguishable irrespective of geographical location and toxin composition. To our knowledge, this is the first study to demonstrate the use of polyclonal antibodies against marker proteins purified from 2-DE gels to distinguish different strains and species of the PST-producing dinoflagellate *Alexandrium*. It provides the basis for the production of monoclonal antibody probes against the "biomarkers of toxicity" for those dinoflagellates whose genome is incompletely characterized. Potentially, immunoassays could be developed to detect the presence of toxic algae in routine monitoring programs as well as to predict bloom development and movement.

P21

PROTEOMIC STUDY OF A MODEL CAUSATIVE AGENT OF HARMFUL ALGAL BLOOMS, *PROROCENTRUM TRIESTINUM* II: THE USE OF DIFFERENTIALLY EXPRESSED PROTEIN PROFILES UNDER DIFFERENT GROWTH PHASES AND GROWTH CONDITIONS FOR BLOOM PREDICTION

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Simultaneous comparison of differentially expressed protein profiles of *Prorocentrum triestinum* grown under different growth phases and growth conditions indicated the presence of phase-specific and stress-responsive proteins, respectively. Correlation studies on these proteins in relation to cell division phasing patterns and to models of phytoplankton growth inferred the possible functions. Most notable among these proteins were groups of proteins thought to trigger or mediate cells through specific phases of division of this alga, e.g., BP1, BP2, PB1, PB2, and PB3. Other proteins (e.g., group 1 proteins) thought to be responsible for maintaining and supporting cell concentration under adverse conditions were found. Furthermore, another group of proteins (group 2 proteins) thought to be stress-responsive were also detected. Taken overall, these differentially expressed proteins provided important information for uncovering various protective and adaptive mechanisms in the dinoflagellate's life cycle. These proteins have the potential to serve as "indicator proteins" for rapid assessment of the nutritional or metabolic status of these phytoplankton cells, and monitoring the differential expression of these phase-specific proteins and stress-specific proteins could be an important biomarker for bloom prediction.

P22

USE OF TWO-DIMENSIONAL GEL ELECTROPHORESIS TO DIFFERENTIATE MORPHOSPECIES OF *ALEXANDRIUM MINUTUM*, A PARALYTIC SHELLFISH POISONING TOXIN-PRODUCING DINOFLAGELLATE OF HARMFUL ALGAL BLOOMS

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Contamination of shellfish with paralytic shellfish poisoning toxins (PST) produced by toxic harmful algal blooms (HABs) have been negatively affecting the shellfish and aquaculture industries worldwide. Therefore, accurate and early identification of toxic phytoplankton species is crucial in HABs surveillance programs that allow fish-farmers to take appropriate preventive measures in shellfish harvesting and other aquaculture activities to overcome the negative impacts of HABs on human health. The identification of toxic dinoflagellates present in the water is currently a time-consuming operation since it requires skillful taxonomists and toxicologists equipped with optical and scanning electron microscopes as well as sophisticated equipment, for example, high-performance liquid chromotography-fluorescence detection. In this paper, a two-dimensional gel electrophoresis (2-DE)-based proteomic approach was applied to discriminate between toxic and nontoxic strains of *Alexandrium minutum*. Variation in morphological features between toxic and nontoxic strains was minimal and not significant. Also, variation in 2-DE protein patterns within either toxic or nontoxic strains was low, but pronounced differences were detected between toxic and nontoxic strains. The most notable differences between these strains were several abundant proteins with pIs ranging from 4.8 to 5.3 and apparent molecular masses between 17.5 and 21.5 kDa. Groups of proteins, namely NT1, NT2, NT3, and NT4, were consistently found in all nontoxic strains, while T1 and T2 were prominent in the toxic strains. These specific protein spots characteristic for toxic and nontoxic strains remained clearly distinguishable irrespective of the various growth conditions tested. Therefore, they have the potential to serve as "taxonomic markers" to distinguish toxic and nontoxic strains within *A. minutum*. Initial studies revealed that the expression pattern of T1 was tightly correlated to toxin biosynthesis in the examined alga and may be used to serve as a potential toxin indicator.

GENERAL INFORMATION

TRANSPORTATION

The Airport Express

Airport Express rail service takes passengers from the airport to Tsing Yi Station (in 13 minutes), Kowloon Station (in 21 minutes) and Hong Kong Station (in 24 minutes). Trains operate from 5:50 am to 1:15 am daily, at 10-minute intervals.

Fares	Airport Station <-> Hong Kong Station	Airport Station <-> Kowloon Station	Airport Station <-> Tsing Yi Station
Single Journey	HK$100.00	HK$90.00	HK$60.00
Round Trip	HK$180.00	HK$160.00	HK$110.00

- Tickets can be purchased from Ticket Issuing Machines or Customer Service Centers at all Airport Express Stations. (Credit cards such as Visa, MasterCard, American Express, Diners and JCB Cards are accepted.)
- Single Journey and Round Trip Tickets are also available at Customer Service Centers at all MTR stations;

Taxis

Taxis to almost anywhere in Hong Kong are readily available. The followings are estimated fares:

Between	**And**	**Taxi Fares**
Airport	The University of Hong Kong	HK$350
Airport	Courtyard by Marriott Hong Kong	HK$350
Airport	Island Pacific Hotel	HK$350
Airport	Ramada Hong Kong Hotel	HK$350
By shuttle bus (Hotel link) from airport to hotel, HK$140 per person per trip		
Hong Kong Station	The University of Hong Kong	HK$60
Hong Kong Station	Courtyard by Marriott Hong Kong	HK$60
Hong Kong Station	Island Pacific Hotel	HK$60
Hong Kong Station	Ramada Hong Kong Hotel	HK$60
Courtyard by Marriott Hong Kong	The University of Hong Kong	HK$45
Island Pacific Hotel	The University of Hong Kong	HK$45
Ramada Hong Kong Hotel	The University of Hong Kong	HK$45

BANQUET VENUE

The Conference banquet will be held at the Prompt, *Le Meridien* Hotel, 100 Cyberport Road, Hong Kong. On Tuesday, 17 June 2014. Details of the restaurant can be found at the following website:
http://english.ctrip.com/hotels/hong-kong-hotel-detail-430371/le-meridien-cyberport/

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BANKING FACILITIES

The Bank of East Asia
Location: G/F, The Centennial Campus **Mondays to Fridays** *9:00am -5:00pm*

The Hongkong and Shanghai Banking Corporation
Location: G/F, Run Run Shaw Building **Mondays to Fridays** *9:00am -5:00pm*

The Bank of China (ATM Centre)
Location: Podium of Haking Wong Building

BUSINESS FACILITIES

Facilities such as fax, photocopying, etc., will be available at nominal charges. Please contact the Conference Secretariat at the reception desk.

MEDICAL FACILITIES

The University Health Service is located at Room 215, Meng Wah Complex. Opening Hours: 9:00 am to 5:00pm. For enquiries, please dial 2549 4686. The consultation fee is HK$150 (excluding medication).

Attendance at an Accident & Emergency Department of Hospital Authority hospital is $990 per visit.

SPECIAL ARRANGEMENTS DURING TYPHOON, RAINSTORMS OR OTHER ADVERSE WEATHER CONDITIONS

1. If a Pre-No. 8 Typhoon warning signal or above, or rainstorm black warning **remains hoisted at or later 7:00am on a day** during the conference period, all presentations scheduled for the morning sessions will be postponed to the next day. Presentations in the afternoon sessions will resume after 1:30pm if the signal is lowered.

2. If the Pre-No. 8 typhoon warning signal or above, or rainstorm black warning **remains hoisted at or after 12:00noon**, all presentations scheduled for the afternoon sessions will be postponed to the next day.

3. In the event of adverse weather conditions, participants are advised to ring the Conference Hotline (9641 3024) to find out the arrangements for the day. **Note that no separate notification will be issued.**

4. A noticeboard at the Reception Desk will provide all details of any re-scheduled events.

INDEX OF PARTICIPANTS

DINING FACILITIES

(a) SUBWAY Run Run Shaw Podium	08:00 – 20:00	**(f) Union Restaurant** 4/F Haking Wong Building (Podium)	07:30 - 21:30
(b) Fong Shu Chuen Amenities Centre Restaurant 2/F, Fong Shu Chuen Amenities Centre	07:30 - 20:00	**(g) Delifrance** G/F The Jockey Club Tower, Central Podium, Centennial Campus	07:30 – 21:30
(c) HKU Halal Food Corner 1/F, Fong Shu Chuen Amenities Centre	10:00 - 20:00	**(h) Grove Café** LG/F, The Jockey Club Tower, Centennial Campus	08:00 – 22:00
(d) Pacific Coffee Company G/F, Fong Shu Chuen Amenities Centre	08:30 - 21:00	**(i) BIJAS Vegetarian** G/F Run Run Shaw Tower, Central Podium, Centennial Campus	11:00 - 21:00
(e) Starbucks Coffee G/F, Library Building Old Wing	07:30 - 22:00	**(j) Super Super Congee** G/F Run Run Shaw Tower, Central Podium, Centennial Campus	07:30 - 21:30


Rayson Huang Theatre
Po Tuck St
保德街
般咸道
Pok Fu Lam Rd
Hillview Garden Block A
山景園A座
Hai Kwang Mansion
海光大廈
Hill Road Court
山道閣
Good Luck Mansion
順景樓
Hill Rd
Kai Fung Bldg
家鳳樓
Yam Pak Building
Visitor and Information Centre
Run Run Shaw Heritage House
(i, j)
Run Run Shaw Tower
Lee Shau Kee Lecture Centre (LG)
(g, h)
Chi Wah Learning Commons (1/F, 2/F)
The Jockey Club Tower
Chiu Sheung School Hong Kong
香港潮商中學
Entrance (West Gate)
Domus U
Pao Siu Loong Building
Hung Hing Ying Building
Main Building
Entrance (East Gate)
College
聖保羅書院
Sin Canossian Kindergarten
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Hing Hon Bldg
興漢大廈
King's College
英皇書院
Mai Hing House
美興樓
T.T. Tsui Building
(b, c, d
Fong Shu Chuen Amenities Centre
canteen
Fung Ping Shan Building
Swire Hall
Tang Chi Ngong Building
Kadoorie Biological Sciences Building
Library Building (New Wing)
Library Building (Old Wing)
Knowles Building
K.K. Leung Building
Chong Yuet Ming Physics Building
Chow Yei Ching Building
Simon K.Y. Lee Hall
Composite Building
(f)
Haking Wong Building
canteen
The University Street
To be completed in April 2013
Hui Oi Chow Science Building
Chong Yuet Ming Chemistry Building
Chong Yuet Ming Amenities Centre
James Hsioung Lee Science Building
Rayson Huang Theatre
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Meng Wah Complex
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… Victus Salus. Longaevitas…

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