CONFERENCE SUMMARY AND HIGHLIGHTS

6th Asian Conference on Food and Nutrition Safety

November 26-28, 2012
Raffles City Convention Centre, Singapore

Minimizing Risks, Maximizing Benefits - A Role for Food Safety and Nutrition

Organizer
Co-Organizer

ILSI Southeast Asia Region
AVA (Agrifood & Veterinary Authority of Singapore)
On November 26-28, 2012, ILSI Southeast Asia Region (ILSI SEA Region) together with its co-organizer, the Agri-Food & Veterinary Authority of Singapore (AVA), organized the 6th Asian Conference on Food and Nutrition Safety at the Raffles City Convention Centre in Singapore. Several other local and international organizations, including the Commonwealth Scientific and Industrial Research Organisation (CSIRO) of Australia, National Environment Agency (NEA) of Singapore, International Commission on Microbiological Specifications for Food (ICMSF) and Singapore Workforce Development Agency (WDA), also provided their support to the conference.

The theme of this edition of the conference was “Minimizing Risks, Maximizing Benefits – A Role for Food Safety and Nutrition”, highlighting the increasing awareness in Asia of the complexities and needs for considering both the risks and benefits when assessing food and nutrition safety concerns. The conference was well attended by more than 350 participants representing academic, government and industry stakeholders from 25 countries across Asia and beyond.

Key Challenges for Food Safety and Public Health

After the welcome addresses by Mr. Geoffry Smith, President of ILSI SEA Region, and Ms. Tan Poh Hong, CEO of AVA Singapore, Dr. Maliki Osman, Senior Parliamentary Secretary, Ministry of National Development, Singapore, provided the keynote address and officiated the opening of the conference. In his keynote speech, Dr. Osman pointed out the three key challenges on food safety being faced globally by all stakeholders, which include changes in food production methods, global warming and climate change, as well as advances in science and technology and methods for food processing. This was followed by a keynote presentation by Dr. Tommaso Cavalli-Sforza from the WHO Regional Office for the Western Pacific Region (WPRO), who shared the public health impact of current nutrition and food safety concerns, as well as WPRO’s regional strategy in addressing some of these issues.
Global Context of Food and Nutrition Safety

Led by Dr. Iddya Karunasagar from the Food and Agriculture Organization of the United Nations (FAO), the opening plenary session set the stage for the rest of the conference by discussing the global context of food and nutrition safety. In his lecture, Dr. Karunasagar discussed the role of food safety in contributing to food security by reducing post-harvest losses and provided a case study of this based on the fisheries supply chain. This was followed by Prof. Martyn Jeggo from CSIRO, who highlighted the importance of a “whole of chain approach” to assuring food safety for consumers, as well as the need for an integrated approach when developing research to address relevant food safety and nutrition issues. Mr. Sanjay Dave, the current Chairperson of the Codex Alimentarius Commission, then shared the role of Codex Alimentarius in setting international food safety standards to both protect the public as well as ensure fair trade in food. He also pointed out some of the challenges faced by the international standards setting body and its current activities that are relevant for developing countries. Finally, Dr. Anthony Huggett from Nestle concluded the session by describing some of the emerging food and nutrition safety challenges, such as the increasing risk of food adulteration in an uncertain global economic climate, the advancement of analytical technologies without the corresponding development of food regulatory limits, as well as increasing sensitization of consumers to perceived food safety risks through online and social media.
Defining “Risk” in Food Safety

An overview of the risk analysis framework, which is a systematic, disciplined approach to making food safety decisions and comprises risk assessment, risk management and risk communication, was shared by Dr. Junshi Chen from the China National Centre for Food Safety Risk Assessment. This was followed by Prof. Diana Bánáti, Executive Director of ILSI Europe, who presented on a project developed by the ILSI Europe Food Intake Methodology Task Force on Guidance for Dietary Intake Exposure Assessment (GUIDEA). GUIDEA is foreseen to be a useful tool to learners of exposure assessment methodologies, practicing risk/exposure assessors as well as decision-makers and others who may use of the results from risk/exposure assessments. Dr. Peter Abbott of Biosearch Consulting, Australia, then shared the approaches to applying risk assessment outcomes for establishing regulatory standards for food additives, processing aids and contaminants. Finally, Dr. Leon Gorris from Unilever shared an example on the application of risk analysis principles in the production of safe food by the food industry.

Communicating Food Safety Risks

Risk communication on food safety issues is increasingly being recognized as a challenge for many stakeholders with the advent of new media, resulting in the increased exposure of the general public to food safety concerns regardless of whether these are substantiated or not. A dedicated session on risk communication was thus organized for the very first time at the conference to provide insights into the approaches, complexities and challenges for risk communication in relation to food safety risks.

Prof. Lynn Frewer from Newcastle University, UK provided an overview of where risk communication fits into the risk analysis framework, as well as the underlying theories of risk perception that underpin the principles of risk communication about food risks. Dr. David Cox from CSIRO followed by providing a case study on consumer risk perception of food products made using recycled water. A systematic review on food risk-benefit communication undertaken by the ILSI Europe Expert Group on Risk Communication was then shared by Dr. Mary Brennan from Newcastle University, which summarized key recommendations for risk communication by various researchers and data gaps for further risk communication research. The first day of the conference was then concluded by national risk communication case studies shared by Dr. Yuk-Yin Ho from the Hong Kong Centre for Food Safety and Ms. Lorraine Belanger from Food Standards Australia New Zealand.

Risk-Benefit of Foods, 3-MCPD Ester, Phthalates, Climate Change, and Other Food and Nutrition Safety Issues

Day two of the conference covered a wide range of food safety topics that were divided into 8 concurrent sessions, including ‘Balancing Risks and Benefits of Food’, ‘Managing Food Safety Risks at the Retail Level’, ‘Chemical Food
Highlights from the day included the presentation on the EU-funded ‘Benefit-Risk Analysis of Foods’ (BRAFO) project, by Dr. Alessandro Chiodini from ILSI Europe, which aims to develop a logical process in addressing food-related problems that require the consideration of both the risks and benefits. This involves sufficient formulation of a problem and applying a tiered approach in assessing it.

Updates on recent and emerging food safety concerns, such as 3-MCPD ester in palm oil and phthalates in flavorings were also shared during the session on ‘Chemical Food Safety’ by Dr. Nuzul Amri Ibrahim from the Malaysian Palm Oil Board (MPOB) and Dr. Thierry Cachet from the International Organization of the Flavor Industry (IOFI) respectively. In both cases, empirical work to identify factors contributing to the presence of these contaminants in the respective commodities and ingredients were presented, together with subsequent measures developed and applied for their mitigation.

Dr. Markus Lipp from the US Pharmacopeial Convention (USP) also shared the USP’s latest initiative to address the emerging concern related to food fraud – the Food Ingredients Fraud Database. The database documents more than 1,300 reported incidents of food fraud from the literature as well as media reports, to serve as a baseline reference of fraud issues for substances and materials used as food ingredients. Additionally, Dr. Lipp also shared the work of the USP in developing validated methods to aid in the detection of economic adulteration of skimmed milk.

The impact of climate change on food safety was also an emerging issue touched upon by two speakers from Korea – Dr. Hyang Sook Chun from the Korea Food Research Institute and Prof. Ki-Hwan Park from Chung-Ang University. Dr. Chun provided insights in relation to the potential threat of higher mycotoxin levels in food crops as a result of temperature rises due to climate change; while Prof. Park shared current research initiatives in Korea to predict the potential impact of climate change on food safety, such as the possibility of different levels and distribution of foodborne pathogens as a result of change in temperature, humidity and precipitation levels resulting from climate change. Reiterating the message by Prof. Jeggo from the previous day, Prof. Park also recommended an integrated approach to food safety from farm to table, including taking into consideration animal and plant health, along with mitigation of environmental risks.

**Emerging Technologies and Food Safety**

A number of emerging food-related technologies are increasingly being perceived to be unacceptably ‘risky’ by consumers, including food irradiation, nanotechnology and food biotechnology. The beginning of day three of the conference thus aimed to facilitate discussions and ways to address some of these concerns. Dr. Purwiyatno Hariyadi from the Southeast Asian Food and Agricultural Science and Technology Center (SEAFAST), Bogor Agricultural University, Indonesia, provided a talk on the opportunities and challenges on the application of food irradiation technology. While food irradiation has the potential to improve food safety by eliminating foodborne pathogens and decrease food losses/wastage by removing pests and spoilage organisms, the technology is currently under-utilized due to negative perceptions by consumers and the lack of appropriate risk-benefit communication, as well as poor collaboration between stakeholders.

Dr. Richard Canady from the ILSI Research Foundation Center for Risk Science Innovation and Application (RSIA) and Dr. Alessandro Chiodini from ILSI Europe provided a joint presentation on the challenges for applying nanotechnologies in food, highlighting the current difficulties in arriving at a science-based definition for what
could be considered as nanomaterials from a regulatory perspective, as well as the latest thinking on approaches for risk assessment of nanomaterials in food. A tiered approach for risk assessment was developed by ILSI Europe’s Novel Food and Nanotechnology Task Force taking into consideration the characteristics of nanomaterials, such as their physico-chemical properties, solubility after ingestion and absorption within the body. Additionally, the RSIA’s ongoing NanoRelease Food Additives project further aims to develop methods that could be used to collect relevant data to support the characterization of such nanomaterials for risk assessment purposes.

Finally, issues related to consumer perception of new food technologies were presented by Dr. Latifah Amin from the National University of Malaysia and Prof. Lynn Frewer from Newcastle University. Dr. Latifah shared a case study conducted in Malaysia on factors influencing consumer perception of food biotechnologies. Such factors include familiarity with the technology, its perceived benefits and risks, as well as moral concern that is linked to religious beliefs. Prof. Frewer further provided an overview on the current understanding of consumer responses to new technologies. A review of existing studies on consumer risk-benefit perceptions of food biotechnologies was shared, which demonstrated different risk-benefit perceptions depending on geographical region. Prof. Frewer also presented a study aimed to predict consumer acceptance of nanotechnologies in food. The study found that although consumers were generally more positive than expected with regards to the application of nanotechnologies in food, informed choice through labeling, as well as effective communication that addresses issues of uncertainty, would likely affect their acceptance of this emerging technology.

Technological Innovations to Improve Food Safety

Although the adoption of certain new food-related technologies have faced considerable challenges, other technologies and interventions that demonstrate clear benefit in improving food safety of products and usefulness for surveillance and foodborne disease outbreak investigation purposes, have gained widespread recognition and acceptance by many stakeholders. Dr. Hyun-Gyun Yuk from the National University of Singapore shared a few examples of such technologies, including the application of UV light, pulsed light, high pressure processing and super-critical carbon dioxide as non-thermal pasteurization methods. Dr. Wu Yuansheng from AVA Singapore further shared promising new technological platforms that can be used for non-targeted food safety screening for potential hazards, such as high resolution mass spectrometry.

Dr. Kari Gobius from CSIRO described the application of ‘omics’ technologies in food safety, such as genomic technology, which was instrumental in the characterization of the novel strain of *Escherichia coli* 0104:H4 that caused the large outbreak of foodborne illnesses in Europe in 2011. Transcriptomics and proteomics, on the other hand, have also been applied to study the survivability of foodborne pathogens and therefore help to assess the effectiveness of interventions using organic acids, low temperatures and drying. Finally, Dr. Linda Harris from University of California-Davis, USA, shared intervention strategies to control foodborne pathogens in low-moisture foods. Dr. Harris stated that such interventions need to be multi-faceted and applied at all stages of production including pre-harvest, harvest, processing and post-processing.

Safety of Food Packaging and Contact Materials

Although food packaging has been a ‘technology’ that has long been widely used to ensure the safety and quality of food products, aspects relating to the assessment of its safety for use have not always been well-understood by many stakeholders. Hence, Dr. Forrest Bayer of The Coca-Cola Company provided a timely overview of the different considerations when looking at the safety of food packaging materials. Dr. Bayer explained that although it is inevitable that materials placed in contact with a food will result in the release of substances from the materials into the food, this
does not necessarily mean that the food will become unsafe as toxicological considerations also need to be taken into account. He further described the different types of packaging materials, packaging additives and packaging migrants that are commonly known, as well the scientific data usually reviewed by food safety authorities in determining the safety these materials prior to permitting its use. Regulations on food packaging and contact materials that have been adopted by authorities in different geographical regions, including USA, EU, MERCOSUR and Japan were also shared.

Complementing this, Ms. Sumalee Tangpitaykul, Ministry of Science and Technology, Thailand further shared information on the food contact materials regulations currently in place among ASEAN countries. In addition, Dr. Yoko Kawamura from the National Institute of Health Sciences, Japan, also provided a case study on the reduction of dietary exposure to Bisphenol A from domestically-made canned foods in Japan. Finally, Mr. Alain Bebius, representing the joint French food industry and packaging industry platform known as ANIA/CLIFE, shared the process of how these two industries managed to come together to ensure compliance with European regulatory requirements on food packaging materials.

**Future Directions for Managing Risk and Benefits of Food**

The closing session of the conference began with short presentations by Dr. Kari Gobius from CSIRO, Prof. Pingfan Rao, current President of the International Union of Food Science and Technology (IUFoST) and Dr. Roy Sparringa from the National Agency for Drug and Food Control, Indonesia. Dr. Gobius began by describing the expected megashocks that will likely impact the global food system in the not-too-distant future, including the rapid increase in food demand and on public health services due to population growth, as well as the threats to biosecurity and food safety due to the rapid globalization of food trade. He then shared how science and technology could contribute to meeting some of these challenges that will be faced in the future. Prof. Rao followed by giving an example of how traditional knowledge and ideas on health and food could also be harnessed to meet future food challenges by validating them based on scientific research and applying them in the modern context. Finally, Dr. Roy Sparringa shared his thoughts on the needs for capacity building in developing countries to be able to adequately manage risk and benefits of foods through applying the risk analysis principles.

Following the presentations, the three speakers, as well as Prof. Diana Bánáti from ILSI Europe and Dr. Roger Bektash from MARS, Inc., participated in a panel discussion chaired by Dr. Paul Chiew of AVA Singapore. Among the topics discussed by the panel were the feasibility of setting up an ASEAN risk assessment body and learning from the European experience in doing so, as well as the constant need to improve communication on risk and benefits of food in order to better manage consumer expectations on food safety, as well as to be able to advance technological improvements that ultimately provide benefits to the public. After leaving the audience with much food for thought, Mr. Geoffry Smith, President of ILSI SEA Region, provided the closing remarks to end a very successful conference.