Healthy Aging among Asian Populations
Strategies to Meet Health and Lifestyle Challenges

6th Asian Conference on Food and Nutrition Safety
Role of Food Safety and Nutrition in Minimizing Risks and Maximizing Benefits
Capacity Building in Food Safety
Regional Training Workshops in Singapore and Indonesia
Micronutrient Food Fortification
Scientific and Regulatory Updates from Malaysia
Carbohydrate Intake
Science and Health Impact of Intake Levels
It has been a busy and fruitful 6 months for ILSI SEA Region since our last issue of Science InSight in October 2012. We organized and hosted the 6th edition of one of ILSI’s signature events – the Asian Conference on Food and Nutrition Safety (ACFNS) – which was held in November 2012 in Singapore.

Focusing on the theme of "Minimizing Risks, Maximizing Benefits – A Role for Food Safety and Nutrition", the conference discussed food safety within the context of the scientific risk analysis framework. With a comprehensive 3-day program that included plenary and concurrent sessions as well as poster presentations and an exhibition, the conference touched upon the latest food and nutrition safety topics, including new risk assessment concepts relating to risk-benefit assessment, discussion of emerging chemical and microbiological food safety concerns, as well as the application of new technologies in foods such as nanotechnology.

While the 6th ACFNS provided a platform to share the latest scientific knowledge and research in the area of food safety, ILSI SEA Region also facilitated training workshops to build regional capacity in food safety risk assessment. Collaborating with the Food and Agriculture Organization of the United Nations (FAO) and Nanyang Polytechnic Singapore, a 5-day training workshop was organized for scientists from key Asian countries in analytical methods for the detection of Vibrio spp. in bivalve molluscs. Another area of growing concern and interest is risk communication relating to food safety issues. With increasing sensitivity among consumers over food safety related incidents, it is more important than ever that food safety authorities and other stakeholders are able to implement effective risk communication. A training workshop for regulators of the National Agency for Drug and Food Control was thus organized by ILSI SEA Region to equipping them with knowledge to better manage stakeholder engagement and strengthen trust in the food regulatory system.

Another public health issue of rising importance in Asia and Australasia is that of rapidly aging populations. A seminar in Australia and a regional conference in Singapore were organized explore the myriad health and lifestyle challenges posed by these demographic changes as well as to exchange ideas on potential strategies to address these challenges. The seminar in Australia provided a broad overview of the issues within the Australian context, and recommendations for future research action by stakeholders. With a panel of international and regional scientists and experts, the conference in Singapore shared cutting-edge research and the latest lifestyle intervention programs to promote healthy aging.

We hope you will enjoy reading reports of these and other meetings in this issue of Science InSight, and look forward to your continued support for our upcoming activities!

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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 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


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. Punwiyatno Haryadi 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 O104: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.

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 as 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 Bebios, 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 from 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.

Please visit www.ils.org/SEA_Region to view a selection of presentations from this conference.

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**Panel members discussing the ‘Future Directions for Managing Risk and Benefits of Foods’ during the Closing Plenary**
Healthy Aging: Strategies to Meet Health and Lifestyle Challenges

Widespread demographic changes are taking place in Asia and Australasia. Countries within the region are starting to experience rapid population aging that presents unique challenges to government policy makers and health care professionals. As the population ages, chronic diseases have become more prevalent and this will both tax the healthcare system and increase public health spending. Nutrition and health strategies to prevent disease, as well as programs to promote healthy aging and improved quality of life, have become an urgent priority.

ILSI Southeast Asia Region and ILSI SEAR Australasia recently held two conferences that explored the link between nutrition, physical activity and healthy aging. The ‘Conference on Healthy Aging in Asia: Strategies to Meet Health & Lifestyle Challenges’ was held in Singapore in March 2013, organized together with Health Promotion Board Singapore and in collaboration with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia. The conference was well attended by over 200 participants from around the region, representing both academia and industry sectors, as well as government officials working in health and aging. The conference brought together a panel of leading experts in the field of research into nutrition and aging.

The objectives of the two day conference were to present current scientific findings on diet, nutrition and longevity; discuss the health status of the elderly in selected Asian countries; share international and regional experience on programs and research into aging; and identify effective nutrition and health strategies and best practices to promote healthy aging. The conference was officially opened by guest of honor Dr. Amy Khor, Minister of State for Health and Manpower, Singapore and Mr. Zee Yoong Kang, Chief Executive Officer of Health Promotion Board, Singapore.

Concepts of Biology and Aging

The first presentation was made by Professor John Mathers, Scientific Director of the Institute for Aging and Health, Newcastle University, UK, who discussed the biology of aging and its’ impact on health. Prof. Mathers highlighted the dramatic increase in human life expectancy in the past 200 years, with studies in animal models indicating that lifespan can be increased (or decreased) by both genetic and environmental strategies. This provides strong evidence that lifespan, and therefore the aging process, is plastic. The burden of health-care costs is skewed heavily towards the later years of life because most of the common chronic diseases are age-related diseases, which may share some common mechanistic factors arising from the cellular damage which accumulates during aging. Importantly, there is strong epidemiological evidence, together with evidence from research using model organisms, that nutrition and other lifestyle factors have substantial effects on the aging process and on the risk of developing age-related diseases and disabilities. Prof. Mathers noted that the public health challenge is to translate those findings into lifestyle-based interventions promoting health and wellbeing into old age, limited at present by lack of good markers of healthy aging.
which can be used as outcome measures in human studies.

Following Dr. Mathers’ paper, Dr. Angelique Chan, Director of the Tsao Ageing Research Initiative at the National University of Singapore, outlined three hypotheses regarding the relationship between longer life expectancy and morbidity. The compression of morbidity hypothesis suggests that longer lives will be associated with a decline in number of unhealthy years over the life span. The second hypothesis is that greater longevity will be associated with more years spent in poor health. A third hypothesis is that there is a dynamic equilibrium between health and year of life; longevity could be accompanied by more health conditions but these are controllable and do not in effect change the proportion of healthy life lived. Prof. Chan presented results from analyses of Singaporean and Japanese older populations, examining whether there is evidence of a compression of morbidity in each country, and gender differences in number of healthy years lived. Results indicated that an expansion of morbidity is occurring and that older women are more likely to live longer and spend more years in poorer health compared to older men.

Dr. Angelique Chan, National University of Singapore, Singapore

Age-Associated Biological Changes and Nutrition

In the next plenary session, Dr. Eric Ravussin, Director of the Nutrition Obesity Research Center at the Pennington Biomedical Research Center, USA, presented research involving long-term calorie restriction (CR) to prevent or delay metabolic syndrome incidence and primary aging: the inevitable deterioration of cells, tissue structure and function occurring independent of disease and lifestyle. Dr. Ravussin reviewed the literature in rodents, monkeys, and humans on the impact of CR on maximum lifespan. CR has been shown to extend median and maximal lifespan in a variety of lower species. One hypothesis for the beneficial impact of CR is that metabolic rate is reduced beyond the reduction in metabolically active mass leading to reduced oxidative damage. Dr. Ravussin presented data on a recently completed study entitled ‘Comprehensive Assessment of Long-Term Effects of Reducing Intake of Energy (CALERIE)’, the first ever 2-year randomized clinical trial on the effects of 25% CR on biomarkers of aging in normal weight participants.

Professor Barry Halliwell, National University of Singapore, introduced his team at the Virtual Institute for the Study of Aging (VISA), whose aims are to investigate the biological determinants of aging well; the environments that best support aging well; and fiscal, medical and other policy issues that can better support Singapore’s aging population. Prof. Halliwell discussed the fundamental concepts of aging and human nutrition, focusing on the role of free radicals and antioxidants. Free radical damage (“oxidative damage”) plays a key role in most age-related diseases and perhaps in the aging process itself, however Prof. Halliwell contends that the simplistic view that this damage can be counteracted by consuming antioxidant supplements is no longer valid. Several anti-oxidant compounds have been shown to extend lifespan in a nematode model organism, however, this is dose-variable and independent of anti-oxidant activity. Research is under way to further understand the molecular mechanisms behind these compounds.

Diet and the Biology of Aging

Professor Woon-Puay Koh, Associate Professor, Clinical Sciences, Duke-NUS Graduate Medical School, Singapore, presented findings from her study examining associations of dietary intakes of soy isoflavones and carotenoids with hip fracture risk among elderly Chinese in the Singapore Chinese Health Study, a prospective cohort of 63,257 men and women who were aged 45-74 years between 1993 and 1998. Results showed a dose-dependent inverse relationship between soy isoflavone intake and hip fracture risk among women, and consumption of vegetables but not fruit was associated with lower hip fracture risk in men. Similarly, dietary intakes of total carotenoids and specific carotenoids, α-, β-carotene and lutein/zeaxanthin were inversely associated with hip fracture risk in men. These gender-specific results in the protective roles of soy isoflavones in women and carotenoids in men suggest that the mechanistic pathway for osteoporosis may be different between the two genders.

The issue of obesity and its impact on healthy aging was discussed by Professor Lynne Cobiac, Director of the Preventative Health Flagship at the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia. Obesity is a risk factor for a number of chronic diseases that are also associated with aging. Those with obesity have a 2-fold greater risk of reporting a disability associated with daily living and lose an estimated 2.4 years of disability-free life years, compared to normal weight groups. One important mechanism for this is that aging is associated with increased chronic inflammation, and age-related accumulation of fat and the presence of obesity may exacerbate that inflammation. However, the so-called ‘obesity paradox’ has been observed whereby those who are overweight and moderately obese may actually survive better from acute health events compared to their lean counterparts. Possible explanations have been suggested including that the aetiology of these diseases may be different and more aggressive in lean individuals. Prof. Cobiac concluded that more research is needed to understand the effects of being ‘fit and fat’, and the effect of body composition on healthy aging.

Active Aging: Staying Functional and Independent

Dr. Chi-Pang Wen, Investigator at the Institute of Population Health Sciences, National Health Research Institutes, Taiwan, focused on the benefits of exercise in the prevention of non-communicable diseases, such as heart disease, stroke, cancer, diabetes, osteoporosis and Alzheimer’s disease. Dr. Wen went on to note that in patients already with these diseases, exercise may reduce morbidity, mortality and improve survival. Exercise may also improve mental health by working against depression and providing an opportunity for social connection. Dr. Wen is an advocate of prescribing exercise for older people, but noted that
there are a number of barriers preventing doctors from doing so, including inadequate experience of exercising, lack of time during medical consultations, lack of compensation for providing advice about exercise; and difficulty in persuading and sustaining behaviour change among patients. Dr. Wen provided practical solutions to break through these barriers.

Health Promotion Board (HPB) Singapore has developed and implemented programs to allow Singaporean seniors to remain functionally independent within the community. Ms. Samantha Bennett, Manager, Healthy Ageing Programmes and Healthcare Partnerships, HPB, outlined these programs, namely the Holistic Healthy Ageing Program, Screening & Management Program, and Mental Wellbeing Program, which equip seniors with the knowledge and skills to get screened and detect disease conditions early; to manage these conditions well and to remain functionally independent. Seniors are also motivated to take charge of their health through peer mentoring and support networks. Recognizing that community partnership is crucial in building a sustainable healthy ecosystem, HPB has engaged partners across the people, public and private sectors to galvanize and co-ordinate networks. Recognizing that community partnership is crucial in building a sustainable healthy ecosystem, HPB has engaged partners across the people, public and private sectors to galvanize and co-ordinate networks.

Nutrition, Genetics and Chronic Diseases

DNA damage due to genotoxin exposure, malnutrition, poor lifestyle and metabolic or psychological stress increases the rate of aging and brings forward the onset of age-related diseases. Professor Michael Fenech, Principal Investigator, CSIRO Australia, summarized what is known about nutritional requirements for DNA damage prevention, giving examples of nutrient-gene interaction in genome integrity maintenance and discussed the prospect of personalized nutrition for DNA damage prevention. DNA damage biomarkers are amongst the most sensitive indicators of nutritional deficiency or excess and Dietary Reference Values based on DNA damage prevention are currently being developed.

Alzheimer’s disease (AD) is the most common form of dementia affecting the elderly, characterized by the build-up of amyloid deposits in selected regions of the brain primarily involved in learning, memory and reasoning. Professor Ralph Martins, Foundation Chair, Ageing and Alzheimer’s Disease at Edith Cowan University, Australia, discussed the development, early detection and lifestyle prevention factors in Alzheimer’s disease. The knowledge that beta-amyloid is a key player in the pathogenesis of AD has resulted in several disease-modifying drugs being developed, however their efficacy is limited as treatment commences when these vulnerable regions of the brain are already damaged. Thus early diagnosis is crucial if these treatments are to be effective. Prof. Martins presented novel approaches being undertaken in Australia through the establishment of the Australian Imaging Biomarkers and Lifestyle Ageing study towards the development of an early diagnostic test for AD.

Optimum Health and Nutrition for Australia’s Aging Population

ILSI SEAR Australasia and The Omega-3 Centre brought together a team of experts in Melbourne, Australia in October 2012 to deliver a one-day symposium ‘Optimum Health and Nutrition for Our Ageing Population’. The symposium highlighted key issues affecting nutrition for the elderly, provided an update on the latest science on nutrition and aging; and made recommendations for future research and for action by industry and government to help address these issues.

Professor Sandra Capra, University of Queensland, provided an overview of nutrition issues in the aging population and their implications for dietary guidelines. Prof. Capra noted that the elderly are not a homogenous group - aging populations contain groups who live with chronic diseases, take medications and are frail, and therefore current dietary guidelines, which are based on a ‘well’ population, may be inadequate for their needs. The challenge is providing a diet which is nutrient dense but contained in smaller amounts of food while remaining palatable and acceptable.

Older adults are among the highest users of prescription and over-the-counter drugs, therefore they are at risk of drug-nutrient interactions. Ms. Yvonne Coleman, Nutrition Consultants Australia, reported that until recently, the interaction between medicines and food has largely been concerned with absorption of nutrients, however some interactions may enhance drug effectiveness and so require the patient to take a reduced dose. Ms. Coleman noted there are numerous mechanisms where drugs impact on nutritional status, making it important for those currently on medication who wish to change their diet, to discuss with their doctor before doing so.

Malnutrition is a key issue in the aging population. Ms. Georgie Rist from Australian biotechnology company
MyGene presented research showing that 8 percent of community-living people aged 65 years and over who receive home nursing care are malnourished, and 35 percent are at risk of malnutrition. Community living elderly who are malnourished have reduced quality of life; are more likely to be admitted to hospital or seek help from a GP, and are less likely to recover from the effects of malnutrition.

Sarcopenia, the age-related loss of muscle mass with a corresponding loss of muscle strength, is associated with an increased risk of physical disability and contributes to frailty, loss of independence, increased falls and in the long-term, a significant increase in healthcare costs. Dr. Solomon Yu, Queen Elizabeth Hospital, Adelaide, presented current research on sarcopenia and concluded that a multifactorial approach in the management and reduction of sarcopenia is necessary; exercise and nutritional therapy being key factors.

Older adults are at a greater risk of injury due to falls, with contributing factors including low physical activity and body weight, low lean and fat mass, compromised vitamin D status, malnutrition, low calcium status and medical conditions such as osteoporosis, dementia, osteoarthritis and stroke. Professor Caryl Nowson, Deakin University, Melbourne, discussed nutritional factors that have been found to reduce falls and fractures including vitamin D and calcium supplementation, and resistance training, particularly when combined with adequate protein consumption. Prof. Nowson suggested a daily intake of 1.2-1.5 g of protein per kilogram of body weight to alleviate age-related muscle loss.

Oral diseases have become a major public health issue in the older population. Professor Eric Reynolds, Melbourne Dental School and Oral Health CRC, presented strong evidence linking chronic oral diseases with systemic diseases - diabetes, cardiovascular disease, preterm and low weight births, and chronic inflammatory diseases such as arthritis and cancers. Encouragingly, major oral diseases are preventable with daily oral hygiene; following a nutritious diet (milk and cheese are excellent sources of calcium which is good for the teeth); early diagnosis of problems and; effective treatment.

Diabetes affects 350 million people worldwide. Professor Merlin Thomas, Baker IDI Diabetic Complication Lab, Melbourne, noted that every second person diagnosed with diabetes in Australia is an older person. Diabetes has been shown to increase the risk of early death (every year of diabetes is a year reduced from life). Abdominal fat is the major risk factor for diabetes and dietary modification with increased exercise is recommended to prevent diabetes in older people.

Age-related macular degeneration is an eye condition associated with aging that gradually destroys sharp, central vision. Dr. Vicki Flood, University of Wollongong, reported results from the Blue Mountains Eye study, where a nutritional supplement including vitamins C and E, beta-carotene and zinc reduced progression to acute macular degeneration (AMD) in 25 percent of cases showing early signs of AMD. The study indicated that a number of dietary factors help reduce the risk of AMD, including the consumption of fruits and vegetables (particularly leafy green vegetables), oily fish (high in omega-3 fatty acids) at least twice a week, foods high in lutein such as leafy green vegetables and lutein-enriched eggs, nuts and seeds once or twice a week, three to four small servings of lean red meat (a good source of zinc), and oils high in omega-3 fatty acids.

Dementia, a progressive and incurable disease that causes a major loss of neurones, leads to cognitive impairment, with Alzheimer’s disease and vascular dementia the most common forms of dementia. Professor Andy Sinclair, Deakin University, Melbourne, presented factors shown to decrease risk of Alzheimer’s disease including consumption of fish and foods high in antioxidants, exercise, maintaining a healthy weight and continuous learning. Factors thought to increase risk include age, head injury, consumption of a high fat diet, obesity, smoking, diseases such as hypertension and diabetes, and HRT. Studies have shown improved memory performance in mild cases of Alzheimer’s disease with a nutritional drink rich in omega 3 fatty acids. Some trials have found that EPA and DHA improved depression scores in elderly people with mild cognitive impairment.

Omega-3 fatty acids have been shown to play a role in relation to other age-related conditions. Dr. Les Cleland, Royal Adelaide Hospital, presented recent investigations which showed fish oils to be effective in the treatment of rheumatoid arthritis by decreasing tender joint pain and the duration of morning stiffness. However, Dr. Cleland recommended that fish oils be used in combination with other medicines appropriate to the stage of the disease. Professor David Colquhoun, University of Queensland, stressed the importance of basing health claims on well-conducted trials presenting strong results, and gave the example of the GISSI trial showing an efficacious effect when one gram or more per day of EPA/DHA was administered to patients with heart failure. At 3 months, total mortality decreased 41 percent, and at 4 months sudden death decreased by 53 percent.

Please visit www.ilsi.org/SEA_Region to view a selection of presentations from this conference.
Scientific and Regulatory Update on Micronutrient Fortification of Food

More than 2 billion people in the world today suffer from micronutrient deficiencies caused largely by a dietary deficiency of vitamins and minerals, especially iodine, iron and vitamin A. The public health importance of these deficiencies lies upon their magnitude and their health consequences, especially in vulnerable groups such as pregnant women and young children.

Various approaches have been utilized in different parts of the world, and these include dietary diversification, food fortification, as well as vitamin and mineral supplementation. In developing countries, food fortification is increasingly recognized as an effective medium to long-term approach to improving micronutrient status in large populations.

ILSI SEA Region’s Malaysia Country Committee, in collaboration with the Nutrition Society of Malaysia, organized a Seminar on Micronutrient Food Fortification – A Scientific and Regulatory Update. Held in October 2012 in Kuala Lumpur, Malaysia, the seminar provided a forum to discuss all aspects of micronutrient fortification in food, with particular attention to Malaysia. The meeting was attended by about 120 participants, comprising mostly nutritionists and food scientists from various organizations and agencies.

The first presentation was by Professor Geok Lin Khor, Dean of the School of Health Sciences in the International Medical University, Malaysia. Prof. Khor gave an overview of the status of micronutrient deficiency in Malaysia, where iodine deficiency disorders have been brought under control to a large extent with mandatory universal salt iodization. However, iron deficiency persists and recent research has found fairly high prevalence of vitamin D insufficiency and folate deficiency in young children and women of reproductive age, respectively. Prof. Khor emphasized that intervention programs to ameliorate micronutrient deficiency in Malaysia require a concerted multi-prong strategy that includes supplementation, education and food fortification.

Dr. E Siong Tee, nutrition consultant for TES NutriHealth Strategic Consultancy, provided an overview of the general principles and approaches to micronutrient fortification, which form part of a broader, integrated approach to prevent micronutrient deficiency. The Codex Alimentarius has published a set of general principles for the addition of essential nutrients to foods, and these guidelines are being further reviewed by the Codex Committee on Nutrition and Foods for Special Dietary Uses.

Dr. Tee also highlighted that ILSI SEA Region has carried out a recent survey of the regulatory status of micronutrient fortification in foods in 10 Southeast Asian countries. The report, published in 2011, pointed out that most countries have individual regulations permitting voluntary fortification with various vitamins and minerals. There are, however, significant differences in the regulations governing these fortification programs. To facilitate trade in the region, it would be useful to initiate discussions amongst countries, and explore ways of arriving at common/similar requirements. Dr. Tee added that it is important to be mindful of the safety of consumers when multiple foods are fortified with a particular nutrient, and all stakeholders - government, industry, academia; nutritionists, food scientists, food technologists, food regulators – need to work together in carrying out exposure assessments to monitor this risk.

The third presentation was by Mr. Geoffry Smith, President of ILSI SEA Region and Chairman of the Essential Micronutrients Foundation. Mr. Smith focused on the strategic considerations in micronutrient fortification, which include dietary diversification, fortification of foods, biofortification, supplementation and education. Mr. Smith cautioned that although fortification is simple in concept, effective fortification requires...
clear strategies, careful implementation and continuous monitoring. Complications include variation of intake and requirements, dietary inhibitors of bioavailability, increased requirements in pregnancy, and effective monitoring. Cost considerations also can be an issue. He then reviewed the advantages and disadvantages of mandatory and voluntary fortification policies, and reminded that risk-benefit concepts may need to be incorporated in strategic plans.

Overviews of the Malaysian regulations on nutrient fortification were provided by Ms. Fatimah Sulong, Principal Assistant Director, Food Safety and Quality Division, Ministry of Health Malaysia, and Ms. Rusidah Selamat, Deputy Director of Nutrition Division, Ministry of Health Malaysia. Ms. Fatimah summarized the relevant regulations related to voluntary micronutrient fortification, including some specific standards that require mandatory fortification for certain micronutrients. In her presentation, Ms. Rusidah provided an update on the status of mandatory micronutrient fortification programs in Malaysia, where the current major focus is on Universal Salt Iodization (USI) for the elimination of iodine deficiency disorders (IDD) and fortification of wheat flour with iron and folic acid for the prevention of neural tube defects.

The final two presentations were by representatives from the Federation of Malaysian Manufacturers (FMM), who shared industry examples of micronutrient fortification of food to create more nutritious products. Ms. Low Bin Kee, Group Technology Manager for Nestle Malaysia, presented an overview of the company’s experience in micronutrient fortification in order to create nutritional value and health benefits across its product range. She shared the company’s experiences in managing micronutrient fortification from the perspective of industrial practices, challenges and opportunities.

Mr. Ong Choon Wah, General Manager for Corporate R&D/Technical, Dairies, Fraser & Neave Pte. Limited shared some of the company’s initiatives to utilize micronutrient fortification technology to help improve the nutrition quality of their food and beverages in order to help consumers meet their recommended nutrition intake.

The seminar ended with a round-table discussion on the future of voluntary and mandatory fortification programs in Malaysia. Issues discussed by the panel included the safety of consumers when multiple foods are fortified, and the importance of conducting exposure assessments to more accurately estimate the potential consumption of the fortified nutrient for comparison with documented safe intake levels. A review of voluntary micronutrient fortification requirements in the Malaysian Food Regulations, such as the minimum levels required, maximum levels permitted and labeling requirements, was also suggested. Overall, the panelists agreed that all stakeholders should collaborate on addressing these important issues relating to micronutrient fortification.
Building Analytical Capacity in Asia for Vibrio parahaemolyticus in Bivalve Molluscs

Asian countries, including China, India and those in South East Asia are among the biggest producers and consumers of bivalve shellfish (eg. clams, oysters, mussels, scallops) in the world. It is therefore not surprising that shellfish-borne pathogens, such as Vibrio parahaemolyticus, are among the most common causes of foodborne illnesses in most of these countries. Nevertheless, the availability of scientific data to support the assessment of risk resulting from consumption of shellfish contaminated by pathogenic strains of V. parahaemolyticus is currently lacking in many Asian countries. Such risk assessments are important, as they can be used to guide effective risk management actions to improve the safety of these types of seafood products.

Recognizing this significant scientific gap, ILSI SEA Region in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and Nanyang Polytechnic, Singapore, jointly organized a training workshop on the ‘Selection and Application of Methods for the Detection and Enumeration of Human Pathogenic Vibrio spp. in Bivalve Molluscs’ in November, 2012 in Singapore. The objectives of the workshop were to train scientists from key Asian countries in analytical methods relevant for developing data for risk assessment purposes, as well as to establish a regional network of laboratories that are undertaking testing, monitoring and research activities on V. parahaemolyticus, which could contribute to the data collection at international level.

The workshop was supported by the ILSI Platform for International Partnerships and was hosted by Nanyang Polytechnic at their state-of-the-art training laboratories. A total of 21 participants from government and academic laboratories in Asia joined the workshop. Invited trainers for the workshop included Dr. Jessica Jones from the US FDA Gulf Coast Seafood Laboratory; Prof. Mitsuki Nishibuchi from the Centre for Southeast Asian Studies at Kyoto University, Japan; Dr. Swapan Banerjee from the Vibrio Laboratory of the Bureau of Microbial Hazards, Health Canada; Prof. Indrani Karunasagar from the College of Fisheries, Karnataka Veterinary, Animal and Fisheries Sciences University, Mangalore, India; and Prof. Son Radu from the Food Safety Research Centre at Universiti Putra Malaysia. Dr. Iddya Karunasagar from FAO also served as the workshop facilitator.

Over the course of five days, the participants learned about different analytical methodologies used to detect and enumerate total and pathogenic strains of V. parahaemolyticus, including conventional microbiological techniques (selective culture methods based on FDA-BAM and ISO), molecular techniques (PCR, Real Time PCR, loop-mediated isothermal reaction or LAMP), as well as hybrid methods (Colony Hybridization).

The workshop served as a useful platform to understand the baseline status and capacity needs of different laboratories in the region, as well as to facilitate future collaborations in the area of research and data exchange for V. parahaemolyticus in shellfish.
Communicating Food Safety Risks – ILSI SEA Region Conducts Training Workshop in Indonesia

In Southeast Asia, public concern regarding food safety has been increasing over the past few years due to several food safety scares that have been widely reported in the media, such as adulteration of infant formula with melamine and misuse of plasticizers in bottled beverages. This heightened sensitivity towards food safety issues necessitates skillful risk communication by food safety authorities in order to reassure consumers that the existing food safety systems are functioning properly and that when real food safety incidents do occur, effective measures are in place to protect the public from harm. In addition, good risk communication is also needed to combat misinformation that raises unwarranted alarm among consumers regarding safety of the food supply.

Recognizing the need to improve on risk communication, the National Agency for Drug and Food Control (NADFC/BPOM) of Indonesia invited ILSI SEA Region to conduct a ‘Training Workshop on Risk Communication for Food Safety Issues’ on November 30, 2012 at their offices in Jakarta, Indonesia.

About 30 BPOM staff participated in the workshop and Ms. Tetty Helfery Sihombing, Director of the Directorate for Food Product Standardization, chaired the workshop proceedings. Ms. Sihombing also provided an overview of some of the challenges currently faced by food safety authorities in Indonesia in communicating risks to consumers, such as the need to educate the public on differences in food additive standards between countries that may result in different regulatory permissions, as well as on the subject of genetically modified (GM) foods.

This was followed by a lecture by Prof. Lynn Frewer from Newcastle University, UK, who shared insight on understanding consumer behaviour and risk perception in relation to food safety issues. Prof. Frewer explained how certain factors, such as the involuntary nature and catastrophic potential of a risk, its ‘unnaturalness’ as well as ethical representation, may all drive consumer decision making and risk perceptions. She also explained how risk communication is an integral part of the risk analysis framework for food safety, and laid out some of the core principles and best practices for risk communication for food-related issues. Several case studies on risk perception and communication in Europe were also shared, including the BSE and Belgian dioxin crises, as well as on GM foods.

Ms. Lorraine Belanger, Section Manager for Communication and Stakeholder Engagement at Food Standards Australia New Zealand (FSANZ), Australia, followed by sharing the experiences of FSANZ in conducting its risk communication activities as well as in engaging various stakeholders on controversial food-related issues. Assoc. Prof. Latif Amin from the National University of Malaysia then shared a study on Malaysian consumer attitudes towards food biotechnology, as well as recommendations for communication strategies to improve the acceptance of food biotechnology among the public based on these research findings. Finally, Mr. Ignatius Purnomo from Indo-Pacific Edelman provided a presentation on risk communication and crisis management, emphasizing the need for stakeholder mapping as part of risk communication and highlighting some of the potential repercussions due to poor handling of food safety incidents.

The workshop successfully provided BPOM staff with broad perspectives on the topic of risk communication, equipping them with knowledge to better manage stakeholder engagement, with the ultimate goal in strengthening trust in the food regulatory system.

Trainers and facilitators of the Workshop
Carbohydrate Intakes – High, Low, or Irrelevant?

ILSI SEAR Australasia and the Grains & Legumes Nutrition Council™, Australia, brought together a panel of experts in Sydney, Australia in March, 2013, to discuss the health effects of carbohydrate intake and the science behind current controversies surrounding this topic.

From left to right: Dr. Jane Muir, Monash University; Dr. Alan Barclay, HI Foundation and Australian Diabetes Council; Mr. Bill Shrapnel, Shrapnel Nutrition Consulting; Prof. Manny Noakes, CSIRO, Dr. Michael Depalo, Campbell Arnotts; Dr. Tony Bird, CSIRO; Dr. Louise Burke, Australian Institute of Sport; Ms. Sarah Hyland, Colmar Brunton; Prof. Amanda Lee, Queensland University of Technology; Prof. Peter Williams, University of Canberra; Dr. Dave Roberts, ILSI SEAR Australasia and GLNC.

**Trends in Carbohydrate Intake**

Professor Peter Williams, University of Canberra, discussed trends in carbohydrate intake and provided an overview of the health effects of various levels of carbohydrate intake. Australia’s National Health and Medical Research Council (NHMRC) suggests that Australians should eat between 45-65% energy from carbohydrates. The most recent data suggests Australians are consuming 46% energy from carbohydrate, compared to countries around the world where intakes range between 38-79%. Prof. Williams cautioned that percentage energy intake is only part of the story and that the total amount of carbohydrate and total energy consumed from carbohydrate are important considerations for health. Prof. Williams noted that higher intakes of dietary fiber and whole-grains appear to be beneficial for health, while low carbohydrate diets are often promoted in the general public for short term weight loss. Notably, a recent meta-analysis found that long term exposure to low carbohydrate diets was associated with a higher risk of all-cause mortality, indicating that low carbohydrate diets in the long term may pose health risks. Prof. Williams concluded that not all carbohydrates are the same and that food-based evidence is best to guide dietary recommendations.

**Risks and Benefits of High and Low Carbohydrate Intakes and Different Types of Carbohydrates**

The potential risks and benefits of low carbohydrate diets were further elaborated on by Professor Manny Noakes, Commonwealth Scientific and Industrial Research Organisation (CSIRO). Based on the current evidence, Prof. Noakes suggested that while low carbohydrate intake (less than 100g/day) appears to be effective for weight management, these diets are often associated with proportionally high saturated fat intake, which may have a negative impact on cardiovascular health through increased LDL cholesterol and deterioration in vascular function. Prof. Noakes suggested that some components of whole-grains may promote fat loss, as there is a body of epidemiological evidence which suggests that higher intakes of grains (particularly whole-grains) is associated with reduced body weight. Prof. Noakes concluded that the inclusion of moderate amounts of carbohydrate in the form of high fiber whole-grains, low glycemic index (GI) grain foods, dairy and fruit is optimal for weight loss and nutrient intakes.

Dr. Alan Barclay, GI Foundation and Australian Diabetes Council, addressed the risks and benefits of high carbohydrate intakes and summarized a recent review which found that a high dietary fiber intake is associated with lower risk for obesity, type 2 diabetes, cardiovascular disease and colorectal...
cancer. Reflecting on the current debate around sugar intake, Dr. Barclay discussed the latest research on dietary sugars and body weight conducted for the World Health Organisation, which found that while sugar-sweetened beverages were a determinant of body weight, weight change was related to total energy intake, and exchanging sugars for other carbohydrates (i.e. starches) was not. Dr. Barclay then presented evidence that GI and glycemic load (GL) are stronger predictors of obesity, diabetes and coronary heart disease and concluded that rather than focusing on sugar or starch content of foods, the evidence suggests that Australians need to lower the GI of their diet.

The short term benefits and long term risks of restricting fermentable carbohydrates were explored by Dr. Jane Muir, Monash University, Melbourne. Recent attention has focused on short chain carbohydrates, collectively known as FODMAPs, for their role in health as well as in the management of Irritable Bowel Syndrome (IBS). FODMAPs found across a number of plant foods have been associated with a range of health benefits as they act as ‘prebiotics’, meaning they promote the growth of beneficial bacteria in our digestive systems. Dr. Muir noted that a significant proportion of Australian adults (~15%) are intolerant to these carbohydrates and experience symptoms associated with IBS when they consume various levels of FODMAP-containing foods. As such, restricting FODMAP foods has become the cornerstone for management of IBS, however Dr. Muir emphasized that this diet is not recommended as a long term dietary approach due to the potential for negative effects on the gut microbiota.

Dr. Anthony Bird, CSIRO, then elaborated on the science of prebiotics and their potential to promote health and wellbeing. Dr. Bird noted that recent animal and human nutritional studies have identified a number of non-digestible carbohydrates that could serve as prebiotics, and have the potential to protect against lifestyle diseases, including type 2 diabetes, obesity, cardiovascular disease, infections and inflammation and promote bowel health. These non-digestible carbohydrates include FODMAPs particularly those found in whole-grains and legumes as well as certain types of resistant starch. Dr. Bird concluded while the evidence to date is promising, more studies are needed to determine whether the beneficial changes in the gut directly result in improvements in human health and wellbeing.

### Measuring Carbohydrate Quality

Dr. Alan Barclay and Mr. Bill Shrapnel, Shrapnel Nutrition Consulting, evaluated the measures of carbohydrate quality. Dr. Barclay outlined the different terms which are used to describe carbohydrates including starch, sugar, fiber, wholegrain, GI and GL. He argued that current food labelling contains incomplete information on carbohydrates and this may be contributing to the confusion around the role of carbohydrates and sugar in nutrition. Mr. Shrapnel suggested the preferred model for healthy eating was a moderate, fat, Mediterranean style diet and what was needed was a universal and systematic guide to carbohydrate quality. He presented a new model for assessing the nutritional quality of carbohydrate-rich foods based on nutrient density and GI. This model and other evidence presented by Mr. Shrapnel found that GI and energy density were unrelated to the sugar content of breakfast cereals. Mr. Shrapnel concluded that his evidence questioned the use of sugar as a measure for assessing the nutritional quality of carbohydrate foods.

### Carbohydrates - Recommended Intakes for Sports Performance

The evolution of carbohydrate guidelines for sports performance was explored by Dr. Louise Burke, Australian Institute of Sport. As carbohydrates play a key role as a fuel for athletic performance, recommendations in the daily diet and during the periods immediately before, during and between exercise have been a central message in sports nutrition guidelines. Guidelines have evolved over the last 30 years from a “one size fits all” recommendation of a high carbohydrate diet to a more individualized approach to the fuel costs of the athlete’s training and competition load. Dr. Burke concluded that today’s guidelines for carbohydrate intake during exercise are specifically tailored to the event. During sustained high intensity sports lasting ~ 1 hour, small amounts of carbohydrate, including even mouth-rinsing, enhance performance via central nervous system effects. While 30-60 grams/hour is an appropriate target for sports of longer duration, events > 2.5 hours may benefit from higher intakes of up to 90 grams/hour.

### Consumer Attitudes and Guidance on Carbohydrate Intake

Ms. Sarah Hyland, Colmar Brunton, shared her experience working in food and beverage market research and explored consumer attitudes to carbohydrate intake. Suspicion, distrust, tension and fear are some of the most common perceptions that consumers link with carbohydrate foods. Consumers often perceive carbohydrate foods to be fattening and there is a fear of added sugars in foods. On the other hand, the value of carbohydrates and particularly whole-grains resonates most strongly at breakfast with consumers. A notable trend Hyland presented was results from a 2012 survey which identified that 16% of Australians are limiting wheat-containing foods, with over a third of these individuals self-diagnosing wheat intolerance.

**Consumer guidance on carbohydrate intake** was discussed by Prof. Amanda Lee, Queenslands University of Technology. The Dietary Guidelines aim to answer the question “What should Australians eat?”. Prof. Lee reinforced that people don’t choose to eat nutrients like carbohydrate but rather choose to eat foods that give us a range of nutrients, and so guidance provided in the Guidelines reflected this. Food modelling that was undertaken to translate Nutrient Reference Values (NRVs) into dietary patterns indicated that Australians need to eat more vegetables, legumes, fruits and wholegrain foods while aiming to eat less starchy vegetables, refined foods, high fat dairy and discretionary foods (extras). Prof. Lee concluded that the revised dietary guidelines provided clear recommendations and supporting materials on what type of foods people need to consume to get the best source of carbohydrates for health and wellbeing.

Ms. Nilani Srinathan, Cereal Partners Worldwide, presented an interactive session exploring the challenges that food industry faces in translating nutrition science into real foods. Ms. Srinathan used breakfast cereal as a practical example and invited delegates to taste products which had differing levels of sugar, sodium, fiber, wholegrain and protein. The respective nutrient information was then revealed to delegates and interpreted. This activity demonstrated that improving the nutrient composition of food products does not always deliver the same tasting product or the nutrient benefits expected. Ms. Srinathan explained that improving the nutrient density of a product recipe requires a careful balance between the overall nutrition, taste, production cost and perceived value of a food or drink. However ultimately, the real test is whether the consumer will buy it, as a product will only impact nutrient intakes if the consumer eats it.
Upcoming Activity Highlights

Meetings

International Conference on Mycological Aspects of Food and Feed Safety, June 27-28, Yogyakarta, Indonesia

ILSI Southeast Asia Region is co-organizing the International Conference on Mycological Aspects of Food and Feed Safety (IC-MAFF) together with the Faculty of Agricultural Technology, Universitas Gadjah Mada, in Yogyakarta, Indonesia from June 27-28, 2013.

Mold and mycotoxin contamination of agricultural commodities is a major problem in many countries in the world, particularly for those with tropical and subtropical climates such as countries in the ASEAN region. This conference will cover a wide range of issues relating to mycology and mycotoxins that are of importance to the food and feed production chain, including mycotoxin surveillance, mitigation efforts, health impacts and regulations.

Please visit the official conference website for further details:

On-going Research and Collaborative Projects

The Prevalence of Childhood Obesity in Thailand and Associated Factors: A Review

This review puts together the results of published and unpublished literature to examine the prevalence and trends of overweight and obesity among children and adolescents in Thailand, using Thai Growth references and international references, for the period 1995 to 2012. Findings from published literature on factors associated with overweight and obesity in these age groups will also be included in the review.

Review: Is There a Genetic Biomarker for Salt Sensitivity that Predicts Cardiovascular Disease Risk?

A collaborative research project between ILSI SEA Region and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) of Australia, where investigators from CSIRO review studies in Asian populations that identify possible gene variants associated with salt sensitivity which may influence hypertension and development of cardiovascular disease.

Estimation of Sodium Intake among Filipinos and Their Sources in the Diet

This joint research project with the Food and Nutrition Research Institute (FNRI) of the Philippines aims to identify levels of sodium intake and major food sources in different age/sex groups in the Philippine population, using data from the 2008 Philippines National Nutrition Survey.
Regional Conference on

Micronutrient Fortification of Foods 2013

October 10-11, 2013
Imperial Queen’s Park Hotel, Bangkok, Thailand

Micronutrient deficiencies continue to present a significant challenge to public health throughout Asia, particularly in vulnerable groups such as pregnant women, young children and the elderly. The fortification of common foodstuffs with micronutrients is an on-going strategy adopted by governments in collaboration with NGOs and the food industry to address this issue. Micronutrient fortification initiatives in Southeast Asia are evolving as regulations and technologies surrounding fortification evolve, and include both mandatory and voluntary fortification. There remains a wide diversity in fortification levels, food vehicles, level of regulatory control, and the actual status of micronutrient deficiencies in some countries in Asia is not well established.

Conference Objectives
The Conference aims to:

1. Provide an update on micronutrient status and deficiencies in Asia including Southeast Asia
2. Address issues related to the micronutrient fortification of foods, including benefits, safety, nutritional and regulatory considerations
3. Provide an update on the status of and discuss future strategies for micronutrient fortification programs in Asia

Who Should Attend
Policy makers and government representatives involved in health promotion, NGOs, Academia, Nutrition and Health professionals, Food and Food Ingredients Industry

Program Topics
- Micronutrient Status in Asian Populations
- Food Fortification: Definition, Benefits and Challenges
- Food Fortification: Regulatory, Safety and Nutritional Issues
- New Technologies in Food Fortification
- Future Strategies to Address Micronutrient Deficiencies in Asia

Call for Abstracts
Researchers are invited to submit abstracts in line with the conference theme and session topics.

Abstract Format
- Up to 500 words
- Objectives, Methods, Results and Summary or Conclusion to be specified.

To submit abstracts, or for enquiries, please email us at ilsisea@singnet.com.sg

Organizer

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### ILSI SEA Region Calendar of Activities 2013

#### Meetings

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<td>Jakarta, Indonesia</td>
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<td>International Conference on Mycological Aspects of Food and Feed Safety</td>
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<td>Yogyakarta, Indonesia</td>
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<td>• Co-organized with the Faculty of Agricultural Technology, Gadjah Mada University, Indonesia</td>
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<td>ILSI Seminar Session at 13th ASEAN Food Conference</td>
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<td>ILSI Seminar Session ‘Micronutrient Fortification: Science and Strategies for Public Health Improvement in Asia’ at the 20th International Congress of Nutrition</td>
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<td>• In collaboration with ILSI Japan CHP and ILSI Focal Point in China</td>
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<tr>
<td>Regional Conference on Micronutrient Fortification of Foods</td>
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<td>ILSI Seminar Session at 8th World Congress on Developmental Origins of Health and Disease</td>
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<td>ASEAN Food Consumption and Exposure Assessment Workshop</td>
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#### Research & Collaborative Projects

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<td>Investigation of Commodity Food Standards and Methods of Analysis in Asia</td>
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<td>In collaboration with ILSI Japan, ILSI Korea and ILSI Focal Point China</td>
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<td>Risk Profile Documents for Chemical and Microbiological Contaminants and Concerns in ASEAN: Mycotoxins</td>
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<tr>
<td>Case Studies Reviewing Food Descriptors Used in National Food Contaminant Standards in ASEAN</td>
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<td>Systematic Review on Salt Sensitivity: Is There a Genetic Pre-Disposition That Predicts Cardiovascular Disease Risk?</td>
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<td>Development of Database on Functional Foods and Ingredients in Southeast Asia</td>
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<td>Estimation of Sodium Intake among Filipinos and their Sources in the Diet</td>
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<td>Validation of WHO Complementary Feeding Indicators against Dietary Intakes of Malaysian Children Aged 6-23 months</td>
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<tr>
<td>Systematic Review of Infant and Young Child Feeding Practices in Southeast Asia</td>
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