

ScienceInSight

News and Updates on Nutrition, Food Safety and Health



The Gut, Its Microbes and Health

New Knowledge and Applications for Asia

ASEAN Food Safety Standards An Update Maternal and Young Child Health Status in Australia and Indonesia Food Consumption Data and Total Diet Studies Methodologies and Best Practice Energy Balance and Active Living Implications for Obesity Prevention Nutrigenetics and Nutrigenomics Developments in Asia Pacific Obesity Research Status and Gaps in the Philippines

From the Executive Director



In this issue of **Science InSight**, we are happy to share with you the many activities that ILSI SEA Region has completed between March and October 2014.

In April, we held our 2014 Annual Meeting and Science Symposium in Singapore. This year's symposium focused on the important topic of food consumption data, highlighting the latest science and methodologies for assessing dietary intake in food consumption research.

The challenging task of obesity prevention was the focus of 2 scientific meetings – a seminar on Energy Balance and Active Living held in Singapore in March 2014, as well as a seminar on obesity research in the Philippines held in September 2014.

In the area of Food Safety, one of ILSI SEA Region's key on-going programs is the workshop series on Harmonization of ASEAN Food Safety Standards. The 11th edition of the workshop series was held in September in Vientiane, Lao PDR. Being the first scientific meeting that ILSI SEA Region has organized in Lao PDR, the meeting was well-attended by delegates and representatives from the region's government agencies, who shared the latest updates from their countries.

A ground breaking conference on the gut microbiome was organized and held in October in Singapore. This being an emerging and critical area of research in the region, the conference brought together renowned international scientists to share their latest scientific knowledge and research findings. The conference was a success, and we hope that the scientists who attended the meeting will be spurred to further their research in this exciting field.

As we enter the last 2 months of 2014, ILSI SEA Region still has a busy slate of activities including a Seminar on Food Innovation/Renovation for Healthier Choices in Malaysia, a Seminar and Workshop on Vitamin D and Health in Vietnam, as well as a Pre-CCNFSDU seminar on Scientific Substantiation of Claims to be held in Indonesia. Finally, a series of ½ day scientific sharing on the safety assessment of GM crops with stacked traits will be organized with the authorities in Singapore and Indonesia. Information on these and other activities are highlighted in the **News & Updates** section of this newsletter. We look forward to many of our stakeholders joining us for these upcoming events.

On behalf of the ILSI SEA Region team, I would also like to wish all our members, advisors, colleagues and friends Season's Greetings and best wishes for 2015!



Boon Yee Yeong
Executive Director
ILSI Southeast Asia Region

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The Gut, Its Microbes and Health

Advances in technology and bioinformatics have made it possible to examine the influence of the intestinal ecosystem on human health. There is increasing evidence that the nutritional value of food is influenced in part by the structure and operations of a consumer's gut microbial community, and that food in turn shapes the individual's microbiome. Understanding the intestinal microbiome is increasingly seen as essential for developing disease prevention strategies and personalized health care regimens.



Opening Address by Mrs. Boon Yee Yeong, ILSI SEA Region, Singapore

ILSI Southeast Asia Region held the conference 'The Gut, Its Microbes and Health: New Knowledge and Applications for Asia' in Singapore on October 8-9, 2014, highlighting current scientific knowledge on the gut microbiome, its interactions with diet and nutrition, and the implications for health and disease, particularly in Asian populations. The conference, organized in collaboration with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, National University of Singapore, Newcastle University International Singapore and Indonesian Society for Probiotics and Prebiotics, was well attended by over 200 participants from around the region representing academia, government and industry sectors.

The conference, bringing together a panel of leading experts in the field of

gut microbiome research, was opened with a Welcome Address from ILSI SEA Region Executive Director, Mrs. Boon Yee Yeong, and Conference Scientific Chair, Professor Yuan Kun Lee, National University of Singapore Yong Loo Lin School of Medicine.

The Intestinal Ecosystem and Core Microbiome

The opening lecture, presented by Professor Liping Zhao, Shanghai Jiao Tong University, China, explored the **basic concepts surrounding the gut microbiota's role in human health**. Prof. Zhao noted that non-digestible and undigested dietary components together

with mucin (a glycoprotein constituent of mucus) and sloughed cells from the colon constitute the nutritional resources to sustain individual gut bacteria. Bio-active substances produced by gut bacteria can have a direct impact on host health, and careful manipulation of the diet can modulate structure and function of the gut microbiota to benefit host health.

Professor Yuan Kun Lee then presented his research findings on **population differences in gut microbiome in relation to diet, environment and the human gene**. Prof. Lee shared the findings of the Asian Human Microbiome Project, a study characterising the gut microbiota in different Asian populations. Phase I consisted of a ten-city study conducted in healthy children aged 7-11 years, and Phase II was conducted in children, adults and seniors in five Asian countries. Data indicated that the variation in gut

microbiota of Asian children and adults is clustered into two distinct groups, mirroring the geographical locations, immigration patterns and agricultural products (diet) of these cities/countries.

Gut Physiology and Intestinal Microbiota throughout the Life Span

The physiology of the colon is inextricably linked to the gut microflora it plays host to, and therefore it is important to first understand human colonic function. Dr. Iain Brownlee, Newcastle University International, Singapore, discussed the **role of the colonic mucus barrier** which provides innate and adaptive immunity. The colonic mucosa is exposed to a spectrum of essential, non-essential and potentially harmful microfloral by-products that must be handled effectively to maintain mucosal integrity, the loss of which is associated with the progression of all major diseases of the colon.

Dr. Patricia Conway, University of New South Wales, Australia, then reviewed **the role and characteristics of the gut microbiota through the life span**. She noted that the initial gut bacteria composition in the infant is affected by the mode of delivery and subsequently by the method of feeding, playing a significant role in the development of the immune system. Successive development and composition of the gut microbiota is influenced by multiple factors including diet, antibiotic exposure, lifestyle and environmental stresses throughout the life span. In the elderly, gut microbiota composition is closely related to where they reside (home or aged-care facility), and a change in major bacteria groups at this life-stage can promote an inflammatory response.

Gut Microbiota in Health and Disease

Dental caries is a public health issue in Southeast Asia, affecting up to 42% of children in Singapore alone. There has been growing interest in the **role for probiotics in caries prevention**, however, no studies to-date have looked at the effect of consumption of probiotic drink products on caries risk. Dr. Stephen Chin-ying Hsu, National University of Singapore, presented research results showing that short-term probiotic drink consumption had cariogenic/harmful effects on low caries-risk participants and cariostatic/beneficial effects in high risk adults. Dr. Hsu emphasised the importance of proper diagnosis and risk assessment by clinicians in the recommendation of probiotic drinks for caries prevention.

Dr. Reuben Kong Min Wong, National University Hospital, Singapore, then described the **role of gut microbiota in Irritable Bowel Disease (IBS)**, including the microbial imbalance experienced by IBS patients. Dr. Wong outlined the role that micro-inflammation plays in the pathogenesis of symptoms and presented evidence for the use of probiotics in treating patients with IBS. The direct manipulation of the intestinal microflora through Fecal Microbiota Transplantation (FMT) was described as having therapeutic potential in IBS and Inflammatory Bowel Disease. However, Dr. Wong cautioned that its long-term metabonomic effects are not yet known.



Prof. Liping Zhao, Shanghai Jiao Tong University, China

The **influence of the gut microbiome on host physiology** was discussed by Professor Sven Pettersson, Karolinska Institute, Sweden/Nanyang Technological University, Singapore. Prof. Pettersson discussed the Holobiont concept, involving the host organism (human) in interaction with all associated microorganisms as an entity (the holobiont) for evolutionary selection to support the biochemical and biological needs of both the host and its microbes. He then presented data illustrating this concept in the link between the placental microbiome and metabolism in early life.

Recent studies have shown a link between gut microbiota and under nutrition. Dr. G. Balakrish Nair, Translational Health Science and Technology Institute, India, presented research analysing the metagenomes of 20 children with varying nutritional status in rural West Bengal, India. Several **differences were observed in the intestinal microbiota of malnourished children** when compared to healthy children, extending the understanding of the basis of malnutrition beyond nutrition deprivation. Dr. Nair commented that impaired nutritional status is not only due to the abundance



Panel Discussion 'Gaps, Opportunities and Future Directions for Gut Microbiome Research' (from left to right): Prof. Seppo Salminen, Dr. G. Balakrish Nair, Prof. Robert Rastall, Prof. Yuan Kun Lee (Chair), Prof. Liping Zhao, Dr. Trevor Lockett, Dr. Rina Agustina, Dr. Patricia Conway

of likely pathogenic microbial groups, but also a result of depletion of several commensal genera.

Prof. Liping Zhao then discussed the chain of causation from alterations in the **gut microbiota in the development of metabolic disease**. Prof. Zhao explained that a gut microbiota producing higher amounts of pro-inflammatory metabolic toxins contributes to metabolic deteriorations in genetic obesity. Dietary interventions rich in non-digestible carbohydrates and phytochemicals shift the gut's microbial imbalance to produce lower amounts of toxins and higher levels of beneficial products, alleviating both genetic and simple obesity and related complications. A toxin-producing gut microbiota works as a "molecular checkpoint" for obesity development and can be used as a potential target for effective treatment and prevention.

The **role of fermentable components of dietary fiber such as resistant starch in gut health** was discussed by Dr. Trevor Lockett, CSIRO, Australia. CSIRO, in collaboration with the University of Tokyo and RIKEN, Japan, have demonstrated how short chain fatty acids produced by fermentation can modify important gut functions such as barrier function and T Regulatory cell induction for control of inflammation.

Maintaining Gut Microbiome Stability

Professor Robert Rastall, University of Reading, UK, defined a prebiotic as "a selectively fermented ingredient that results in specific changes, in the composition and/or activity of the gastrointestinal microbiota, thus conferring benefit(s) upon host health metabolism". Prof. Rastall went on to discuss the key health benefits ascribed to



prebiotic oligosaccharides, categorising them according to levels of evidence (Groups A, B and C) with Group A, namely inulin and oligofructose, demonstrating good microbiology with state of the art technique, and good human studies showing health benefits. He addressed the position of bifidobacteria as the key mediators of these health benefits, noting that regulators have yet to recognise this link and emphasising the need for more robust human data on Group B & C prebiotics.

The term 'probiotic' was originally defined by the FAO/WHO in 2002. Prof. Seppo Salminen, University of Turku, Finland, reviewed the definition of the term 'probiotic' and outlined the development and conclusions of a recent **International Scientific Association of Probiotics and Prebiotics (ISAPP) consensus paper** endorsing the definition "live microorganisms that, when administered in adequate amounts, confer a health benefit on

the host." Prof. Salminen presented an overall framework for probiotic products including what constitutes sufficient levels of evidence for health benefits.

Prof. Ingrid Surono then discussed recent research conducted on two **novel indigenous probiotics isolated from traditional fermented buffalo milk in Indonesia**. Supplementation with novel probiotics *Lactobacillus plantarum* IS-10506 and *Enterococcus faecium* IS-27526 was found to have significant positive effects on humoral mucosal immune response and body weight gain in immuno-compromised (malnourished and HIV positive) pre-school children.

Prof. Kristin Verbeke, KU Leuven, Belgium, presented evidence on the physiological and nutritional effects of microbial metabolites, in particular short chain fatty acids (SCFA), as **biomarkers for the health benefits of prebiotics**. Prof. Verbeke noted that SCFA may



Poster Exhibition: Group A - Functional Foods and the Gut Microbiota and Group B - The Gut Microbiota in Health and Disease



Prof. Yuan Kun Lee, National University of Singapore, Singapore



Prof. Robert Rastall, University of Reading, UK and Dr. Patricia Conway, University of New South Wales, Australia

have effects on colonic health, host physiology, immunity, lipid protein metabolism and appetite control. At present there is insufficient evidence to use fecal bacterial metabolite concentrations as markers of prebiotic effectiveness, however, integration of results from metabolomics and

metagenomics holds some promise for understanding the health implications of prebiotic microbiome modulation.

Environmental Influences on the Gut Microbiota

Recent studies show that commensal gut microflora can act as reservoirs of antibiotic resistance. Dr. Sharmila Mande, TCS Innovation Labs, India, presented results of comprehensive analyses of the **presence of antibiotic resistance genes in the gut microflora** of 275 individuals from eight different nationalities. Results indicated that genes conferring resistance against 53 different antibiotics were found in the human gut microflora, with four distinct clusters of individuals (referred to as 'Resistotypes') that exhibited similarities in their antibiotic resistance profiles in their gut microbiota.

Prof. Hideki Ishikawa, Kyoto Prefectural University of Medicine, Japan then presented research on the role of **dietary fiber and *Lactobacillus casei* in colorectal cancer prevention**. A clinical study conducted on 398 men and women free from tumors who had at least two colorectal tumors removed randomly assigned subjects to consume either wheat bran, *Lactobacillus casei* shirota strain, both or neither. No significant difference in the development of new colorectal tumors at 2 and 4 years was observed with administration of either wheat bran or *Lactobacillus casei*. However, results suggested that the consumption of *Lactobacillus casei* prevented structural abnormality of colorectal tumors.

Foods for Gut Health: Regulatory Challenges

Research findings on the health benefits of probiotics and prebiotics for gut health have led to the introduction of a number of food products in this category. Prof. Seppo Salminen noted that **substantiation of health claims in the area of gut health** has been challenging for probiotics and prebiotics and in the European Union; only one health claim has been approved for use, related to probiotic bacteria in yoghurt with live yoghurt cultures. He noted that the introduction of novel probiotics and prebiotics into the food supply will require a different level of safety assessment.

Ms. Yusra Egayanti, National Agency for Drug and Food Control, Indonesia, outlined **regulatory challenges in the development of foods for gut health**, with a comprehensive review of the pre-market evaluation and post-market control on probiotics in Indonesia. Ms. Egayanti cited examples of common pitfalls in the applications process, including lack of scientific evidence; study population not appropriate for the proposed claim wording; and insufficient data on safety, interaction, and efficacy of multi-strain probiotics. She emphasized that strong collaboration between industry, academia and regulators is needed to support the effective regulation and innovation of foods for optimal gut health. The conference concluded with a panel discussion '**Gaps, Opportunities and Future Direction for Gut Microbiome Research in Asia**'.



Organizers and Faculty: ILSI SEA Region Conference on The Gut, Its Microbes and Health, Singapore

Status of Maternal and Child Health in Indonesia and Australia

ILSI SEA Region is working actively in the area of Maternal, Infant and Young Child Nutrition, as it is now known that good nutrition during the 1,000-day period between the start of a woman's pregnancy through to her child's second birthday lays the foundation for a healthy and productive future, both for the individual child as well as the entire country. Malnutrition during this critical period results in irreversible physical and cognitive impairments that prevent children from achieving their full potential. It is therefore essential that mothers are given the opportunity to provide their children a healthy start in life.



Organizers and Faculty, ILSI SEA Region Seminar on Maternal, Infant and Young Child Nutrition in Indonesia (from left to right; top to bottom): Dr. Trihono, Dr. Dini Latief, Dr. Atmarita, Dr. Noroyono Wibowo, Dr. Doddy Izwardy, Ms. Pauline Chan, Prof. Shi-an Yin, Ms. Jocelyn Wong, Dr. Umi Fahmida, Dr. Souksavanh Sysamay, Dr. Anies Irawati, Dr. Rosalind Gibson, Dr. Lisa Houghton, Dr. Corazon Barba, Dr. Pattanee Winichagoon, Prof. Umaporn Suthutvoravut and Dr. Siti Muslimatun

To address this important issue, ILSI SEA Region organized 2 seminars in August 2014. The seminar held in Indonesia looked into issues concerning mothers and young children in developing countries, while the seminar held in Australia explored topics and research more relevant to developed countries.

Maternal, Infant and Young Child Nutrition in Indonesia – An Update

The health of mothers, their new-born infants and young children in Indonesia

remains a major challenge. The country reports a high rate of adolescent pregnancy, raising concerns about nutrition needs during this critical period of growth and development for both mother and infant. Among young children, the prevalence of stunting remains high with the double burden of malnutrition and overweight in children occurring in a number of regions. Complementary feeding that provides dietary diversity will be vital to ensure that nutrient needs are met.

ILSI SEA Region collaborated with the Ministry of Health, Indonesia to organize a one-day seminar held on August 13, 2014 to examine the current nutrition and health status of adolescent females, pregnant and lactating women and their

implications on the health of infants and young children, as well as the current nutrition and health status of infants and young children in Indonesia. The seminar also discussed and reviewed the existing programs and practices that helped to address the needs of pregnant and lactating mothers, infants and young children. Gaps were also identified in existing knowledge, and potential solutions to optimal nutrition in pregnant and lactating mothers, infants and young children were discussed. Lastly, the seminar discussed the current and potential strategies available to combat the issue of under- and over-nutrition in young children in Indonesia.

The seminar opened with an address by Dr. Anung Sugihantono, Director

General of Nutrition Management and Mother and Child Health, Ministry of Health, Indonesia, who explained the two intervention policies (nutrition-specific and nutrition-sensitive interventions) which the Indonesian government intends to implement to address nutrition problems that Indonesia is currently facing. He mentioned that improving maternal and child nutrition and health will be undertaken through community health centres and community empowerment through the involvement of scientists, the private sector and the government from the national to the district level.

Indonesia is one of the countries participating in the EU-supported SMILING Project, which aims to identify and prioritize intervention strategies to prevent micronutrient deficiencies among women and children in five Southeast Asian countries. Dr. Siti Muslimatun, SEAMEO RECFON, Indonesia, introduced the eight working plans of the SMILING Project, and explained the findings from the research and their implications. She cited the emergence of **new deficiencies such as Zinc and Vitamin D in the Indonesian child population and the need to optimize complementary feeding** which includes fortification of foods to help fulfil nutrient adequacy. Through a Multiple Criteria Mapping (MCM) technique, it was found that stakeholders generally preferred the use of food fortification of specific products with micronutrients particularly targeted for pregnant women and women of reproductive age, followed by daily intake of iron-folic acid supplementation for pregnant women and lastly, the use of multi-micronutrient powder as complementary foods for infants and main meals for children, to address micronutrient problems. Provision of updated and reliable data on the population's food consumption and micronutrient status as well as strengthening the capacity of national and local institutes, particularly in adopting tools and technology for improving the delivery of nutrition programs, are vital in alleviating the region's micronutrient deficiency situation.

Pregnant and Lactating Women

The first session, chaired by Dr. Atmarita, Indonesian Nutrition Association (PERSAGI), Indonesia, provided insights on the **current nutrition and health status of pregnant and lactating women**. Dr. Anies Irawati, National Institute of Health Research and Development, Ministry of Health, Indonesia, started the session and cited the important factors associated



with high-risk pregnancy: existing health conditions such as high blood pressure and diabetes; conditions of pregnancy such as multiple gestation and gestational diabetes; age of the pregnant mother; and lifestyle of the pregnant mother. She noted that pregnant mothers should have adequate nutrient intake, avoid alcohol, smoking, and caffeine and should only carry out light physical activities.

Dr. Noroyono Wibowo, University of Indonesia, stated that **adolescent pregnancy** is responsible for 11% of all births worldwide and that 95% of these births occur in low- and middle-income countries. Adolescent pregnancy causes an increased risk of anaemia, malaria, HIV and other sexually transmitted infections, postpartum haemorrhage and mental disorders, such as depression. Indonesia has the highest disability-adjusted life years (DALYs) per 100,000 inhabitants for schizophrenia, which may start developing as early as five years old. There are also prospective and cross-sectional studies that reported an association between low vitamin D and schizophrenia. Dr. Wibowo emphasized the need for high-quality and complete nutritive materials with a well-developed nutrition plan for each pregnancy.

Dr. Trihono, Indonesian Health Care Professionals Council, reported that Indonesia has seen an increase in **maternal mortality** ratio with the highest percentage due to oedema, proteinuria, hypertensive disorder and postpartum haemorrhage, even though coverage for maternal health services has increased. He attributed this contradiction to the low quality of maternal health services currently provided to the population, poor health and nutrition status of pregnant women, and other social determinants such as the mother's education levels

and economic status. Dr. Trihono stated that **maternal health care** is the priority in health development where policies and programs were directed towards increasing the roles and capabilities of midwives through education and training, integration of maternal health insurance into the National Health Insurance Scheme of Indonesia and increasing the quality of services in health centers and hospitals.

Infants and Young Children

The second session of the seminar, chaired by Dr. Dini Latief, Central Executive Board of Indonesia Medical Association/ Indonesia Clinical Nutrition Physician Association, Indonesia, discussed the **current nutrition and health status of infants and young children in Indonesia** and reviewed the existing programs and practices that help to address the needs of infants and young children. Dr. Doddy Izwardy, Directorate of Nutrition, Ministry of Health, Indonesia, started the session by noting that Vitamin A and Iodine deficiency in Indonesian children are now under control. However, the prevalence of stunting, under-nutrition and iron deficiency anemia in children remains, due to insufficient maternal nutrition and various factors such as socio-economic status. He also reported that there is **an emerging issue of overweight children** in Indonesia which requires attention, since it can increase the risk of hypertension, stroke and diabetes in later life. Dr. Izwardy explained that the Ministry of Health has nutrition-specific and nutrition-sensitive intervention programs that target to increase the nutrient intake of mothers in the first 1,000 days of life,

which is crucial to facilitate the foetus and infant's development. The government has also implemented the '1,000 Days of Life' Movement under the 'Scaling up Nutrition' or 'SUN' Movement and the Food and Nutrition Action Plan 2011-2015, targeting food and nutrition development at national and provincial levels to alleviate the problems of stunting, under-nutrition and iron deficiency anemia, as well as other issues faced.

Dr. Umi Fahmida, SEAMEO RECFON, Indonesia, presented findings on **complementary feeding** in Indonesia which is characterized by low to medium dietary diversity and inadequate nutrient density, especially for calcium, iron, zinc, folate and niacin. Risk of inadequate dietary diversity increased for poor households, for mothers with no education, and in younger age groups (6 – 11 months old) while the extent of nutrient deficiency varies across age groups, area (urban/rural) and socioeconomic level. Dr. Fahmida noted that optimized complementary feeding recommendations (CFR) which promote locally available nutrient-dense foods (both naturally occurring and fortified foods) play a critical role in improving dietary diversity and nutrient density through a complementary feeding diet. It is also important to adapt CFR to the specific settings such as existing food resources and level of education, and integrate them with existing channels such as health institutions and through mass media.

In addition to the experts from Indonesia, scientists from New Zealand also shared their findings and perspectives. Dr. Lisa Houghton, University of Otago, New Zealand, reported that **nutritional assessment** plays an important role in identifying the need for micronutrient interventions and in designing micronutrient programs. The prevalence of micronutrient deficiencies can be detected through laboratory work, while dietary assessments can provide evidence of inadequate nutrient intake in the population. Anthropometric data on growth can assess chronic under-nutrition and ecologic factors which, including additional information about population characteristics, may be used to identify the causes of inadequate micronutrient intake and support the design of context-appropriate interventions.

Dr. Rosalind Gibson, University of Otago, New Zealand, described her findings from studies on **fortified complementary foods** in three Asian countries, namely the Philippines, Mongolia and Cambodia. Her team had used the countries' dietary intake data and the Intake Modeling, Assessment and Planning Program (IMAPP) to determine distribution of

usual nutrient intakes based on available estimates of within-person variation and then established the desirable fortification levels using World Health Organization guidelines. Some of the enabling strategies to overcome possible constraints to fortification of complementary foods that Dr. Gibson mentioned included the use of public education and social mobilization to create consumer demand, selecting appropriate and bioavailable fortificants, obtaining support from international partners in designing standards and laws for fortification of complementary foods, creating public-private partnerships where appropriate, and establishing adequate regulatory monitoring by governments to ensure quality assurance at the level of production and point of purchase.

Maternal and Infant Nutrition – New Australian Research

ILSI SEA Region's Country Office in Australia, in collaboration with the Omega-3 Centre, organised a one-day workshop on maternal and infant nutrition held on August 19, 2014 in Melbourne.

Nutrition Needs of Mothers and Infants

Dr. Manfred Eggersdorfer, Senior Vice President at DSM Nutritional Products, was the first speaker and his talk covered topics on the **quality and safety of food products in maternal and infant nutrition**. He noted the growing issue of allergy, which can start at the earliest age, and the relationship between allergy and diet. Dr. Eggersdorfer emphasized the importance of quality assurance over the full value chain of production for infant food products, including allergen risk. As breast feeding is the preferred choice for infant feeding, if there is a need for infant formula, it is better to choose one with the ingredients closest to those found in breast milk. Inadequate nutrient status for mothers/infants is considered a risk factor for the development of chronic diseases later in life. Dr. Eggersdorfer concluded that every child has the right to healthy, nutritious and safe food.

Dr. Andrew McPhee, the Women's and Children's Hospital, Adelaide, investigated the effects of Omega-3 DHA (Docosahexaenoic Acid) supplementation in neonates in two large randomized controlled clinical trials (RTC). The first trial determined the effects of **DHA**

supplementation on preterm neonate's neuro development. It was reported that DHA significantly reduced the cognitive function delay between the high and standard DHA groups. Particularly, infant girls whose birth weight was below 1,250 g showed better neurodevelopmental scores than boys, and there was also a significant reduction of chronic pulmonary disease in the high-DHA group boys. In the second trial - the DHA to Optimize Mother Infant Outcome (DOMInO) trial, DHA supplementation showed positive significant effect by decreasing depression during pregnancy compared with the unsupplemented pregnant women group, prolonged pregnancy and reduced risk of early preterm births. These important outcomes have prompted further large RCT to address issues directly for clinical practice.

Dr. Barbara Meyer, Associate Professor of Nutrition, University of Wollongong, said that during pregnancy, the nutrient requirements increase to support maternal health and the needs of the growing baby. Particular attention should be given to calcium, folate and folic acid, iron, iodine, zinc, protein as well as polyunsaturated fatty acids (PUFAs). She reported on a study conducted with 118 pregnant women to evaluate the influence of education material on **DHA consumption in pregnant women** in Australia. 93% of women found that the DHA pamphlet and shopping card was useful, increased their awareness and knowledge about DHA, and thus increased their fish consumption.

Breast Feeding and Child Feeding Practices

Professor Peter Davies, University of Queensland, discussed the updated information on optimal infant breast feeding practices; duration of breast feeding; appropriate age to introduce solids; and specific introductory solids; based on a recent birth cohort study - the **Feeding Queensland Babies Study**.



Previous breast feeding studies indicated that the first 6 months of exclusive breast feeding confers greatest protection against major health problems (e.g. gastrointestinal infection), medium and long-term risk of morbidity and mortality among infants. The previous National Health & Medical Research Council (NHMRC) Infant Feeding Guidelines suggested that early introduction of complementary foods (before 4 months) increased the risk of food allergy and later obesity. However, the findings from the "Feeding Queensland Babies Study" are in contrast with the current NHMRC guidelines and the current data suggests that a) solids can be introduced between 4-7 months because infants have more tolerance to allergies; b) breast feeding in Australia is high, with 96% of mothers initiating breastfeeding; c) around 24% of mothers had stopped breast feeding completely when their infants are 4 months of age; d) 99% of mothers introduce non-milk foods by 6 months of age. This research highlighted that the revised NHMRC guidelines should be aware of such practices of mothers, based on this study.

Dr Shao Jia Zhou, Women's & Children's Health Research Institute, and the University of Adelaide, looked at the **effect of routine iodine supplementation in pregnancy** on primary and secondary outcomes in the PINK trial (Pregnancy Iodine and Neurodevelopment). NHMRC recommends iodine supplementation of all women planning pregnancy, pregnant and lactating women at 220 ug/d versus

160 ug/d for non-pregnant women. She reported that there was no difference in primary outcomes (development and growth of the children) and secondary outcomes (pregnancy, child mortality and thyroid function) for 59 study subjects.

Associate Professor Anthea Magarey, Flinders University, evaluated the impact of universal feeding intervention practices on **maternal feeding practices to reduce childhood obesity** in the NOURISH randomized controlled clinical trial (RCT). In the NOURISH RCT, a total 698 first-time mothers with healthy term of infants were enrolled. The first module commenced immediately when the children were aged 4 to 7 months with an underlying goal of 'learning to like, liking to eat', and the second module was started at 14 to 16 months of age to address issues arising from increasing autonomy of the child to self-select their food. The results have shown that at 4 years of age with responsive feeding (intervention of the mothers) and appropriate management of neophobia and innate taste preferences could reduce future obesity risk. It was found that a higher proportion of novel

food items were accepted by the children in the intervention group compared with the control group. The control group infants had higher BMI than those in the intervention group and were more likely to show rapid weight gain from birth to follow-up. In conclusion, the intervention provided anticipatory advice on protective early feeding practices to support the development of healthy child eating habits and less obesogenic child eating behaviours.

Dr. Kylie Hesketh, Deakin University, evaluated the effectiveness of a **parent-focused intervention on infant obesity-risk behaviours** through a community-based, cluster-randomised controlled trial called the Melbourne Infant Feeding, Activity and Nutrition Trial (InFANT) Program. The study found that the intervention group observed reductions in sweet snack consumption and television viewing in 20-month-old children compared with controls. Moreover, children in the intervention group continued the consumption of sweet snacks at significantly lower levels, and showed improved parent-child interactions. The current findings support the hypothesis that a parent-focused intervention reduces infant obesity risk behaviours.

Allergy and Young Children

Associate Professor Peter Vuillermin, Deakin University, presented research from the Barwon Infant Study (BIS) which is a population-derived birth cohort study (n= 1,069 infants) with antenatal recruitment, conducted at Barwon, south east of Melbourne. BIS has been

designed to investigate the role of specific **environmental factors in early life immune dysregulation and in the subsequent development of allergy**. He said that up to 10% of one year old infants living in Melbourne have challenge-proven IgE-mediated food allergy. There are a variety of studies that support the importance of the early life microbial environment, for example, studies in rural Germany consistently showed lower prevalence of asthma and allergic disease among children living on farms. Children living on farms were exposed to a wider range of microbes than the reference group, and this exposure explained a substantial fraction of the inverse relationship between growing up on a farm and asthma. A/Prof Vuillermin concluded that we should be aware of non-communicable disease which have their origins in early life and characterized by chronic and abnormal inflammation.

Professor Katie Allen, Melbourne Royal Children's Hospital, presented results from The HealthNuts study in Melbourne. More than 1 in 10 of all 1 year old children have clinical **food allergy**. There are four leading hypotheses for the rise in food allergy: infant feeding, hygiene hypothesis (microbial diversity), vitamin D hypothesis, and genetics and skin barrier function. Infants introduced to cooked egg at 4-6 months old were 5 times less likely to get egg allergy than if introduced after 10 months. Infants with siblings and dogs at home are much less likely to develop food allergy. She reported that 40% of Australian pregnant women have low vitamin D status. Australian-born infants with vitamin D insufficiency at 12 months are much more likely to have food allergy. Genes, family history and migration all appear to play a part in food allergy as well as other factors.



Another Step Forward for Harmonization of ASEAN Food Safety Standards

Since 2001, ILSI SEA Region has been supporting ASEAN Member States in identifying technical needs and potential areas for the harmonization of food safety standards. Continuing this longstanding initiative, ILSI SEA Region in collaboration with the Food and Drug Department, Ministry of Health, Lao People's Democratic Republic (PDR), organized the 11th ASEAN Food Safety Standards Harmonization Workshop on September 17-19, 2014 in Vientiane, Lao PDR. The meeting was attended by delegates from food safety agencies in 9 of the 10 ASEAN countries (Brunei, Cambodia, Indonesia, Lao PDR, Philippines, Malaysia, Myanmar, Thailand and Vietnam), scientific experts from academic and government institutions, as well as observers from the United States Department of Agriculture and members of ILSI SEA Region's Food and Water Safety Science Cluster.



Organizers, Faculty and ASEAN Region Delegates: 11th ASEAN Food Safety Standards Harmonization Workshop, Vientiane, Lao PDR

Mr. Geoffry Smith, President of ILSI Southeast Asia Region provided the opening remarks for the workshop, which was followed by the welcome speech by Dr. Somthavy Changvisommid, Director-General of the Food and Drug Department, Ministry of Health, Lao PDR. Mrs. Tetty Helfery Sihombing from the National Agency for Drug and Food Control (NAFDC), Indonesia, served as the overall chairperson for the workshop together with Prof. Dedi Fardiaz from Bogor Agricultural University, Indonesia, who served as co-chairperson.

For this edition of the workshop, the main topic areas discussed were the **harmonization of food additive,**

flavouring and food contaminant standards in ASEAN. Prior to the workshop proceedings, Mr. Keng Ngee Teoh, Senior Manager, Scientific Programs, ILSI SEA Region, provided a **review of the key objectives of ILSI SEA Region's series of ASEAN Food Safety Standards Harmonization Workshops,** as well as outcomes from the previous workshop held in 2012. It was recalled that one of the decisions from the previous workshop was to hand over the ASEAN Food Safety Standards Database to the ASEAN Consultative Committee on Standards and Quality (ACCSQ) Prepared Foodstuff Product Working Group (PPFWG), which has since been transferred to the latter official ASEAN working group for their

use in the harmonization process of food safety standards. ILSI SEA Region has since been participating at the meetings of the ACCSQ PFPWG to provide regular updates regarding the progress on the development of the Database.

Updates on ASEAN Food Safety Standards

National representatives from the ASEAN food safety agencies provided country **updates in relation to regulatory developments in food additive, flavouring and contaminant standards.**



Cambodia shared that the Codex General Standard for Food Additives (GSFA) and Codex General Standard for Contaminants and Toxins in Food and Feed (GSCTFF) were adopted as mandatory national standards. Indonesia provided updates regarding new food additive regulations, as well as corresponding regulations that provide maximum use levels for 27 functional classes of food additives. New flavouring regulations are also being drafted. In 2013, both Lao PDR and Myanmar revised their national food law, while the Philippines enacted a new Food Safety Act. Malaysia shared that contaminant standards for melamine have been adopted, while there are plans to implement microbiological criteria for foods as part of new Microbiological Contaminant Regulations yet to be enacted. Thailand shared updates on new food additive provisions adopted in 2013 relating to the use of cyclamates and steviol glycosides, as well as requirements for labelling of food additives. In addition, food additive provisions for sweeteners, preservatives, colours and other food additives are also currently being revised. Vietnam has recently added 99 new provisions for 45 food additives. In addition, a recently completed study was shared that assessed the level of harmonization of Vietnamese food standards with Codex Alimentarius standards, which demonstrated a high degree of harmonization especially in relation to 'high-risk' products and areas.

Codex Guidelines and National Procedures for Food Additive Approvals

Following the country updates, Dr. Mitchell Cheeseman from Steptoe and Johnson LLP, USA, shared the **general principles for the use of food additives** that have been adopted by the Codex Committee on Food Additives; while Dr. Thierry Cachet from the International Organization of the Flavor Industry

shared the Codex Guidelines for the Use of Flavourings, as well as safety assessment procedures for flavourings by the Joint FAO/WHO Expert Committee on Food Additives (JECFA). Subsequently, Dr. Cheeseman, followed by Dr. Andrew Bartholomaeus, Adjunct Professor at the University of Canberra and University of Queensland, shared the respective **national procedures and data requirements for the approval of food additives** in the USA, Australia and New Zealand respectively.

Risk Assessment and Standards for Aflatoxins in ASEAN

The second day of the workshop focused on discussing issues relating to **aflatoxin standards in ASEAN countries**. Dr. Bartholomaeus shared information regarding the hazard characterization of aflatoxins by JECFA, in particular the correlation between aflatoxin exposures with increased incidence liver cancer. Ms. Laila Rabaah Ahmad Suhaimi, Ministry of Health Malaysia, subsequently shared the results of the Malaysian Total Diet Study for aflatoxins, which showed that exposure to aflatoxins in the adult Malaysian population were mostly from the consumption of peanuts and peanut products. Based on the assumption that all peanuts contaminated with aflatoxins could be removed by regulatory controls, it was calculated that exposure to aflatoxins could be reduced by 65 to 90% through the adoption of a 15 ppb maximum level of aflatoxin in peanuts; while a maximum level of 5 ppb would only provide an additional reduction of only 5 to 7%.

In relation to the development of contaminant standards, Dr. Hidetaka Kobayashi from the Plant Products Safety Division, Ministry of Agriculture, Forestry and Fisheries, Japan, shared the principles and criteria for the establishment of maximum limits for contaminants in foods that are adopted by the Codex Committee for Contaminants in

Food. He emphasized that the setting of maximum limits alone would not increase the safety of food, as it is more effective to adopt and implement code of practices that could help to reduce the level of contamination by aflatoxins in food products. However, if the setting of maximum limits are deemed necessary for regulatory purposes, they should only be set for food commodities that contribute significantly to the overall diet and should also be set at a level that is low enough to sufficiently protect public health while not being too high such that it would disrupt international trade. Following this, Dr. In Sokneang from the Institute of Technology of Cambodia shared a short study conducted to assess the existing baseline level of contamination of rice with mycotoxins in Cambodia, as well as described some of the challenges for the risk management of mycotoxins in the country both at the post-harvest stage as well as in terms of regulatory controls, and monitoring and surveillance.

Workshop Recommendations

At the conclusion of the workshop, the working group recommended that ILSI SEA Region could assist in developing a draft outline for potential ASEAN guidelines on the use of food additives and flavourings, as well as to focus on developing an ASEAN risk profile for aflatoxins in peanuts, which could be used for future decision-making in harmonizing such standards at the regional level.



Dr. Somthavy Changvisommid, Director-General, Food and Drug Department, Ministry of Health, Lao PDR; Mr. Geoffrey Smith, President, ILSI SEA Region, Singapore

Energy Balance and Active Living for Obesity Prevention

Achieving energy balance has been recognized as one of the key contributors towards weight maintenance and obesity prevention. Recent scientific studies have also shown that energy intake and expenditure change over time in response to one another, integrating the impact of dietary patterns, food components and physical activity, with influence from psychobiological factors such as appetite control and social environment.

ILSI SEA Region, in collaboration with the Singapore Nutrition and Dietetics Association (SNDA) and the Health Promotion Board (HPB) Singapore, organized a seminar on 'Energy Balance and Active Living: Perspectives on Obesity Prevention', held in Singapore on March 22, 2014. The seminar brought together several leading international and regional experts in the field of weight management, energy metabolism, physical activity, and behavior, to share current knowledge and understanding on the complex inter-related components to energy balance, as well as new approaches and intervention programs to positively effect lifestyle changes for better health outcomes and obesity prevention.

The objectives of the seminar were to address the complex nature of energy balance including the interactive role of dietary components, determinants affecting food choices, physical

activity and the environment in weight management; understand the science and benefits of physical activities at different life stages; assess the impact of physical inactivity on public health outcomes; share local and regional intervention programs and best practices that promote active lifestyle; and discuss issues and potential strategies and policy towards achieving energy balance in obesity prevention.

Chaired by Professor Michael Chia, National Institute of Education, Singapore, the seminar commenced with a brief welcome by Mrs. Boon Yee Yeong, Executive Director ILSI Southeast Asia Region, Singapore. Professor John Blundell, University of Leeds, UK, began by discussing the **implications of appetite control, food choice and physical activity for energy balance and weight control**. He noted that physical activity (PA) not only increases energy expenditure (EE) but also has an effect on

energy intake or appetite control, thereby influencing energy balance (and body weight) through two separate processes. When people change from an active to a sedentary lifestyle, eating habits are not adjusted therefore favouring a positive EB and tendency for weight gain. Raising EE through PA has a dual action on appetite control (increasing hunger but also intensifying satiety through an action on the satiety cascade) meaning that appetite is actually better regulated for a physically active person. Prof. Blundell explained that in intervention studies in middle-aged people in which exercise is both mandatory and supervised, weight loss is normally observed.

However, the individual variability is very large with some people losing large amounts of weight and others (approximately 15%) gaining weight. The weight lost is almost entirely fat tissue whereas the weight gained is lean tissue



Organizers and Faculty: Energy Balance and Active Living



Dr. Steven Blair, University of South Carolina, USA

(fat-free mass), indicating that body weight itself is a very poor indicator of the response to PA and should not be given importance. More significant is the change in body composition, with a greater proportion of adipose tissue in sedentary people than active people even at the same BMI. There are significant health benefits of PA (even in those people who gain weight) including reductions in blood pressure and heart rate, plasma insulin, waist circumference (and therefore visceral fat) and increases in cardiovascular fitness.

Professor Andrew Hills, Mater Research Institute, Australia, addressed the **role of physical activity and exercise in the context of obesity prevention across the lifespan**, citing examples of complex interventions that consider the interplay between behavioral, social and environmental influences. Regular PA and exercise has a major role to play in obesity prevention across the lifespan, yet many individuals are inactive and do not engage in sufficient habitual PA to confer health benefits. Prof. Hills noted that the best approach would be to target primary prevention strategies, commencing such interventions with the very young. However, the primary prevention of obesity at the population level is extremely challenging, particularly in the context of a modern, obesogenic society dominated by sedentary lifestyle practices often combined with an abundant supply of food. Prof. Hills concluded that an evidence-based, multi-sectoral approach is needed with strategies that provide better support for parents and families to make small, achievable changes. In addition, systemic and sustainable changes in education, transport and the workplace are needed, supported by necessary policy leadership.

Dietary Reference Intakes are calculated using "reference people" of specific and characteristic height, weight, sex, physical activity and environmental conditions for the country. However, some of the energy and nutrient needs of many active people (and very sedentary people) do not fit these standard reference categories

without adjustments being made. Dr. Johanna Dwyer, Tufts University School of Medicine, US, discussed the **nutrient needs of very active adults** and how best to develop programs to meet them. Although recommendations for many vitamins and minerals remain fairly constant for active versus inactive people, intakes of water, electrolytes, energy and under certain circumstances, some macronutrients such as carbohydrate and perhaps protein, differ. If individuals are very sedentary, since the PA levels provided are based on the general population, it is possible that energy intakes will be above their estimated energy requirement with resulting weight gain, and for very active people they may be too low. Similarly, estimated intakes do not apply for those who are attempting to lose or maintain weight loss. Dr. Dwyer noted that special dietary guidance is required for very physically active people and cited some online resources such as the 'Human Performance Research Center'.

Dr. Steven Blair, University of South Carolina, US, highlighted the **impact on morbidity and mortality of being sedentary**. Sedentary and unfit individuals are at an approximately two-fold higher risk for many health conditions than those who are moderately active and fit. Citing the Aerobics Center Longitudinal Study (ACLS) that followed more than 50,000 men and women in the US for 35 years, Dr. Blair noted that the population attributable risk (PAR) for low fitness was 16-17% of deaths. Dr. Blair added that over the past few decades, the need for PA at home, on the job, and during leisure-time has been engineered out of the daily lives of most people in industrialized societies. To address the major public health problem of physical inactivity, he contended that societal, environmental, and individual approaches to making PA more common for more people more of the time should be considered.

Exercise is integral to effective weight loss and weight maintenance, however, prescribing exercise to weight loss patients is a challenge because such patients tend to be sedentary and suffer comorbidities. Furthermore, doctors do not have the time nor the confidence to prescribe exercise in the clinical setting, and personal trainers shun clients with comorbidities. Dr. Benedict Tan, Changi Sports Medicine Centre, Singapore, introduced the **'Exercise is Medicine'** movement - a global initiative launched by the American College of Sports Medicine, whose goal is to systematically address such barriers by empowering doctors,

allied health clinicians, and health and fitness professionals with the competency to prescribe exercise and also by establishing a framework to overcome these challenges. Dr. Tan outlined his own use of an 'Exercise Prescription', as a critical component of the Changi Sports Medicine Centre Weight Loss Program Strategy.

Increased urbanization and industrialization has resulted in a dramatic decrease in PA level in China, with lifestyles becoming more sedentary. Mr. Zhengxiong Yang, ILSI Focal Point in China, outlined the **"Take 10!™" program, a school-based physical activity program** using 10-minute segments of moderate to vigorous PA in the classroom to reduce sedentary behavior and improve health of elementary school children. Launched in 2003 by ILSI-Focal Point in China and implemented by the National Institute of Nutrition and Food Safety, Chinese Center for Disease Control and Prevention, the "Take 10!™" program was piloted, evaluated and extended gradually into 30 provinces. Evaluation results indicated that "Take 10!™" had a significant effect on BMI, fat mass and lipid profiles in children, and was positively received by teachers and students. In 2011, the "Take 10!™" program was included in the "Healthy Lifestyle for All" national level health promotion program initiated by the Ministry of Health, China, with more than 1,600 elementary schools having launched the "Take 10!™" program by June 2013.

Singapore, like most developed countries, is experiencing an **energy imbalance**. In 2010, residents on average reported consuming an estimated 300 kcal/day in excess of requirements based on the relevant Recommended Dietary Allowance (RDA) for energy, up from a reported 100 kcal/day excess in 2004. Concomitantly, Singapore's rapidly evolving urban environment in conjunction with long working hours have contributed to a more sedentary lifestyle. As a result, the obesity prevalence rate has increased from 6.8% in 2004 to 10.8% in 2010, with Singapore facing the risk of 1 in 5 residents being obese by 2020 if no aggressive action is taken to mitigate the current caloric imbalance. Dr. Robert Sloan, Health Promotion Board, Singapore, provided **an overview of Singapore's ecological and multilevel approaches that aim to encourage active living and healthy eating**. These included health promotion programmes in a number of settings such as food and beverage outlets (restaurants, caterers, hawker centres), schools, supermarkets and the workplace, in addition to targeting active transport policy and urban redevelopment.

The Science and Application of Food Consumption Data in Southeast Asia

The notion that we are what we eat underpins the recognition, with increasing scientific evidence, that food consumption patterns are linked to our nutrition and health status. Reliable data concerning the food consumption of individuals is needed not only for assessing the nutritional intakes for the population, but also to assess the exposure of individuals to the many other food components and substances such as food additives, chemical and microbiological contaminants present in our food supply, whether intended or not.



Faculty (from left to right): Prof. Gerhard Rechkemmer, Dr. Wen-Harn Pan, Dr. Sofia Amarra, Ms. Panpilad Saikaew, Mr. Keng Ngee Teoh, Dr. Prapasri Puwastien.

Dietary intake data is used by most nations for setting nutrition and safety guidelines, as well as for developing reference international safety standards for food ingredients and products. However, current differences in methodologies for assessing dietary intake mean limited comparability across countries. With dietary risk assessment increasingly carried out at international level, regional and international harmonization of dietary monitoring and intake assessment will become more important.

The symposium 'The Science and Application of Food Consumption Data: Improving Nutrition and Food Safety in Southeast Asia', held at the Hilton Hotel Singapore on April 10, 2014, was organised as part of ILSI SEA Region's 2014 Annual Meeting. The objectives of the symposium were to update on the latest scientific knowledge in food consumption research methods and tools and their current applications relevant

to the region; discuss the use of food consumption data to assess population nutrient intakes, exposure to food additives and contaminants, and risk/benefits; review and discuss current challenges, limitations and potential advances in food consumption data collection for nutrition and dietary exposure assessment in the ASEAN region; review the current status of the food composition data in SE Asia, identify gaps, quality of data, and impact on food consumption data in ASEAN; and discuss benefits and challenges of harmonization of dietary assessment tools to enhance data comparability and for health guidelines.

Chaired by Professor Jeyakumar Henry, Singapore Institute for Clinical Sciences (SICS), the symposium commenced with a brief welcome by Mr. Geoffry Smith, President, ILSI SEA Region, Singapore. Professor Gerhard Rechkemmer, Max Rubner-Institut, Germany, began by

reviewing and comparing the different methodologies used in obtaining food consumption data, such as computer-assisted diet history interviews, 24 hour recalls or weighing protocols, each with specific advantages but also methodological weaknesses. He noted that a necessary prerequisite is the availability of reliable food composition data to link the frequency and amount of intake of foods or food categories (e.g. fruit, vegetable, meat, fish etc.) to the respective intake of nutrients. However, without also analyzing the nutrient status by measuring biomarkers in blood or urine, no conclusions about the sufficiency of nutrient supply through the diets can be drawn by just studying the nutrient intake. Prof. Rechkemmer noted that actual data about the consumption of food in the general population or of specific groups of the population (e.g. age, gender) are needed for science-based public health recommendations and for toxicologically

relevant exposure assessment of naturally occurring or food processing related substances of concern and for environmentally relevant contaminants.

Prof. Rechkemmer added that a distinction in the methodology has to be made between studies aiming to evaluate the regular food consumption of a specific population, and total diet studies related to risk assessment of substances in the diet. He introduced new analytical methods used to improve food consumption data, including metabolomics which aims to analyze hundreds or even thousands of substances in one single analytical sample that may be done in a targeted or non-targeted approach. The major methods used are based either on NMR- or on mass spectrometry-technology, and can be applied to food or to human body fluids (e.g. blood, urine, saliva). These are new tools which still need to be verified in larger studies but already show huge potential for improving the standard food consumption methodology.

Dr. Wen-Harn Pan, Institute of Biomedical Sciences, Academia Sinica/Institute of Population Health Sciences, National Health Research Institutes, Taiwan, introduced **novel methodology for obtaining and analyzing food consumption data**, currently being used in the Nutrition and Health Survey in Taiwan. As Asian food culture is diverse and has clear distinction from its western counterpart, Dr. Pan's group developed a set of food piece models, corresponding model-to-weight equations, and protocols suitable for quantifying mixed dishes in 24-hour recalls. Dr. Pan noted that innovation is needed to estimate the prevalence of nutrient inadequacy, since 24-hour recall data has an inherent problem of poor representation of the long-term intake, and food frequency questionnaires (FFQs) cannot estimate the exact amount of foods consumed. Dr. Pan's group has utilized a statistical method to remove this daily variation in nutrients, resulting in better population-level prevalence estimates.

The project **'Strengthening ASEAN Risk Assessment Capacities: Food Consumption Data'** was initiated by the ASEAN Expert Group on Food Safety, with the support of ILSI SEA Region and the Food and Agriculture Organization of the United Nations (FAO). Mr. Keng Ngee Teoh, ILSI SEA Region, Singapore, described the project and key outcomes, noting that reliable food consumption data is an essential element for undertaking dietary exposure assessment to support science-based regulatory decision making on food safety issues. However, many ASEAN countries have to-date collected national food consumption data mostly for nutrition purposes, through national nutrition surveys and national health surveys. Recognizing

the need to expand the usage of existing food consumption data within the region to include food safety, ILSI SEA Region, FAO and the Food Safety and Quality Division (FSQD) of the Ministry of Health, Malaysia, serving as lead country of this initiative, organized a series of two workshops on **'ASEAN Food Consumption Data and Exposure Assessment'**.

The first workshop, conducted in 2011, succeeded in reaching a consensus among national experts on food consumption data and risk assessment that such data should be made available for the purpose of conducting dietary exposure assessment, both at the national and regional levels. The compilation of existing national food consumption data into a common ASEAN database was recommended, with a draft list of food categories developed. The second workshop, held in 2013, succeeded in finalizing the list of food categories and sub-categories, in addition to other requirements for the database including statistical details and age groups. These were harmonized with those requested by FAO/WHO, so that food consumption data from ASEAN countries could be directly used for risk assessment conducted by international expert bodies such as the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and Joint FAO/WHO Meeting on Pesticide Residues (JMPPR). Mr. Teoh noted that work to complete the database, using the harmonized templates to compile national food consumption data, was currently underway. He added that future goals in relation to this ASEAN initiative may include harmonizing food consumption survey methodologies and finding ways to further disaggregate composite foods, allowing for more accurate dietary exposure assessment.

Ms. Panpilad Saikaew, National Bureau of Agricultural Commodity and Food Standards (ACFS), Ministry of Agriculture and Cooperatives, Thailand, presented the Thai perspective on **using food consumption data for dietary exposure assessment**. National food consumption surveys conducted in Thailand had primarily been conducted for nutrition purposes, until the ACFS, as the standard setting body, collaborated with the Institute of Nutrition, Mahidol University (INMU) Thailand, to generate a national food consumption survey for risk assessment purposes. A 4-year project running from 2002-2006, the survey allowed more efficient and accurate overall exposure assessment in Thailand and supported risk managers in their decision-making on food safety. Ms. Saikaew presented in detail one example of the use of the resulting food consumption data – the development of maximum residue limits (MRLs) for agricultural pesticides.

The **Association of Southeast Asia Network of Food Data systems (ASEANFOODS)**, was established in 1986

with a membership of ten ASEAN countries, and INMU, Thailand as the network's regional center under the guidance of the INFOODS project of the FAO. Dr. Prapasri Puwastien, ASEANFOODS Coordinator at INMU, noted that the aim of ASEANFOODS was to help strengthen members' activities in developing good quality national and regional food composition databases. ASEANFOODS achieves this through regular network meetings; conducting training courses on food composition data (FCD) systems and development, and internal and external quality control systems; and facilitating international conferences on FCD. ASEANFOODS has also organized a laboratory performance study (proficiency testing program) and developed resources such as the ASEAN manual of food analysis, the ASEANFOODS website, and the ASEAN Food Composition Tables. The most recent version of the ASEAN FCD, developed in the year 2000, was compiled using data from 6 ASEAN countries (Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam) and included 17 food groups, 1750 food items and 21 nutrients. Dr. Prapasri noted that a new version of the ASEAN FCD should be available by the end of 2014 or early 2015. Despite the progress made over the years, she highlighted the many gaps in terms of the comprehensiveness of both the national and regional food composition data, and urged for more support to enable updates of the ASEANFOODS on missing nutrients and inclusion of data from manufactured and processed foods.

Dr. Sofia Amarra, ILSI SEA Region, Singapore, presented **results of a literature review of sodium and sugar intakes in Southeast Asia**, showing that, based solely on food consumption data, sodium intakes of adults in Southeast Asia exceeded the WHO recommendation of 2,000 mg/day. Preliminary results of an analysis of nationwide survey data from the Philippines suggested that major sources of dietary sodium were instant noodles, dried fish, bread, and canned meat products. For sugar, results of a literature review for Malaysia indicated that the country's sugar supply is high from Food Balance Sheet and intakes of sugar among adults were also high based on food consumption data. However, while dietary assessment methods are useful in identifying sources of sodium and sugar intake, biomarkers of intake can more accurately estimate their levels of consumption. Dr. Amarra recommended that countries use both food consumption and biomarker measures to enable better intake assessment to guide policy and interventions to reduce excessive sodium and sugar consumption for chronic disease prevention.

Developments in Nutrigenetics and Nutrigenomics in Asia Pacific

The science surrounding nutrigenomics and nutrigenetics is growing in interest in the Asia-Pacific region. The 8th Congress of the International Society of Nutrigenetics/Nutrigenomics (ISNN) was held on the Gold Coast, Australia, on May 2-3, 2014, in conjunction with the 4th International Science of Nutrition in Medicine Conference and the 6th Asia-Pacific Nutrigenomics Conference.

The 8th ISNN Congress was supported by ILSI Southeast Asia Region, CSIRO, Nutrigenomics New Zealand, the International Society of Nutrigenetics/Nutrigenomics and the journal "Nutrients", and organized by the Australasian College of Nutritional and Environmental Medicine (ACNEM). The Congress brought together 190 scientists, nutritionists and graduate students and healthcare & industry professionals from the Asia-Pacific region and other countries to **exchange knowledge on the many aspects of the science of nutrigenetics and nutrigenomics and its potential applications in therapeutics as well as disease prevention.**

The Congress theme "Nutrigenetics/Nutrigenomics to Optimise Health in Rapidly Aging and Culturally Diverse Populations" was chosen to reflect the challenges of defining nutritional requirements that are properly suited to meet the health needs of populations that are culturally and genetically diverse, experiencing rapid changes in the food supply and at the same time becoming older. The Congress program covered **important research areas including the epigenetic effects of maternal nutrition; obesity, diabetes and cardiovascular disease; inflammation, DNA damage and cancer; and brain and mental health.**

A highlight of the Congress program was the two early-career scientist sessions, involving 8 presentations selected from the abstracts to compete for the **inaugural John Milner Prize.** The prize, sponsored by ILSI Southeast Asia Region, was named for Dr. John A. Milner, an internationally respected scientist well known for his broad



understanding of nutrition and its role in cancer prevention, and former Director of the USDA Beltsville Human Nutrition Center. Dr. Milner sadly passed away in December 2013.

The series of Asia-Pacific Nutrigenomics Congresses, held bi-annually since 2005, highlighted the need to establish **the Asia-Pacific Nutrigenomics and Nutrigenetics Organisation (APNNO)** to facilitate communication and collaboration amongst researchers and clinicians working in this field in the Asia Pacific region and also to provide a more solid basis for organizing future Asia-Pacific Nutrigenomics conferences. APNNO was officially launched during the 8th ISNN Congress, with 28 people

working professionally in the field of nutrigenomics/nutrigenetics attending the APNNO Foundation meeting. Prof. Michael Fenech (Australia) was elected foundation president of APNNO, with Prof. Young-Joon Surh (Korea) elected as president-elect starting from 2016 when he will organize the 7th Asia-Pacific Nutrigenomics conference in South Korea.

For more information: Abstracts of the papers from the 8th ISNN Congress were published in the International Journal of Nutrigenetics and Nutrigenomics (J Nutrigenet Nutrigenomics 2014;7:1-38).

National Workshop on Total Diet Studies in Indonesia

Total diet studies are a very useful public health tool that can help to monitor the dietary exposure to different chemical hazards in the normal diet of a population. Recognizing the importance of conducting total diet studies, the National Institute of Health and Research Development (NIHRD), Ministry of Health, Indonesia, has decided to implement the first ever Indonesian national total diet study in 2015. To support the planning of the total diet study, ILSI SEA Region together with the NIHRD, organized the National Workshop on Total Diet Studies on June 17-19, 2014 in Jakarta, Indonesia.



The main objective of the workshop was to provide technical assistance on various issues related to the implementation of the total diet study, covering the selection of chemicals for analysis, development of the food list, food sampling and preparation procedures, as well as quality assurance for laboratory analysis. The workshop also provided the opportunity for countries with prior experiences in conducting total diet studies to share their experiences and knowledge with their Indonesian counterparts. International experts that were invited to participate in the workshop included Dr. Philippe Verger from the World Health Organization, Dr. Wu Yongning from the China National Center for Food Safety Risk Assessment, Dr. Nick Fletcher from Food Standards Australia New Zealand and Ms. Laila Rabaah Ahmad Suhaimi from the Food Safety and Quality Division, Ministry of Health, Malaysia.

As part of the workshop, colleagues from the NIHRD also shared an overview and the proposed plans for the first Indonesian total diet study, which would include a pilot total diet study to be conducted in the province of Yogyakarta during the fourth quarter of 2014. The pilot study would provide useful experience in relation to the implementation of a total diet study, and the study results could subsequently help to guide improvements to the protocol for conducting the total diet study at the national level.

To further assist in the technical understanding of specific issues in relation to the planning and implementation of total diet studies, **several case studies were also undertaken during the workshop** based on preliminary food consumption data collected from Yogyakarta province. This included the construction of a draft

food list that represented at least 80% of the total diet of the population. An important learning outcome from the exercise was that drinking water and water used in food preparation often has to be separately dealt with, as they contribute to a large portion of the diet, in order to ensure that sufficient food items are represented in the total diet study.

Apart from providing technical support for the Indonesian total diet study, the workshop also helped to **facilitate the establishment of working relationships and mutual understanding between international and national agencies involved in food safety risk assessment activities**, with the view of ensuring a harmonized approach in conducting total diet studies across the Asia-Pacific region.

Healthy Aging Research: Collaboration in Southeast Asia

As the demographic profile of much of the Southeast Asian region moves rapidly towards an aging population, a substantial body of research will be required to understand the genetic, nutritional and lifestyle factors that affect healthy aging and the impact of interventions in this population group. The National University of Singapore (NUS) Department of Psychological Medicine, together with ILSI SEA Region, held a symposium and roundtable discussion on Aging Research Collaboration at the NUS Yong Loo Lin School of Medicine, Singapore on September 8, 2014.

The keynote speaker for the symposium was Professor Richard Head, Deputy Vice Chancellor and Vice President of Research and Innovation at the University of South Australia (UniSA), and former head of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Preventative Health Flagship. Prof. Head presented an overview of the thematic approaches to aging research, outlining current **aging-focused research at UniSA**. He noted that the current focus in this area spans from the cellular level

to the societal level, including the aging cell; pain and aging; the aging brain (e.g. Alzheimer's disease); early to mid-life determinants of aging including lifestyle, nutrition, food, exercise; and age-friendly societies. Prof. Head emphasized the need for aging research collaboration in the region, as the type of large-scale research required would be beyond the capability of any single laboratory.

Following Prof. Head's presentation, Professor Ng Tze Pin from the Department of Psychological Medicine, NUS, gave an introduction to **aging research at NUS**, including the **Gerontological Research Programme (GRP)**. The GRP uses a multi-disciplinary research group to improve understanding of population aging transition in Singapore, through the establishment of the Singapore Longitudinal Aging Cohort, a community-based cohort of elderly subjects.

Professor Kua Ee Heok from the Department of Psychiatry and Neuroscience, NUS, presented an



From left to right: Dr. Sofia Amarra, Mrs. Boon Yee Yeong, Dr. Stephen Rodda, Dr. Ixchel Brennan, Mr. Geoffrey Smith, Prof. Richard Head, A/Prof. John Chee Meng Wong, A/Prof. Tze Pin Ng

early dementia prevention program developed in Singapore. The **Jurong Ageing Study** delivered a psychosocial intervention program of music, art and tai chi therapy classes to senior citizens, with follow-up to test psychological rating scales for depression and anxiety, as well as genetic markers and markers for oxidative stress. Depression and anxiety scores of the therapy groups were significantly reduced at weeks 4 and 10 of the program.

Principle investigator under the NUS Life Sciences Institute Neurobiology and Ageing Programme, Professor Gavin Dawe, then outlined a number of research projects currently being undertaken by his group. The **Neurobiology and Ageing Programme** consists of a broad-based group of investigators who conduct inter-disciplinary research that includes developmental and molecular neurobiology and the neurobiology of perception and cognition. He noted that age-related neurodegenerative diseases

(especially Alzheimer's and Parkinson's disease) and stroke account for an increasing proportion of Singapore's healthcare budget and place a social burden on the community, hence NUS have made aging and age-related diseases, especially neurodegenerative diseases, a major focus area.

Dr. Stephen Rodda from ITEK, the technology commercialisation arm of the University of South Australia, then outlined ITEK's mission which is to **translate research outcomes into products and services that positively impact society**. He highlighted ITEK's expertise in facilitating partnerships and building capacity through industry and entrepreneurial engagement. An interactive roundtable discussion followed the symposium, identifying and elaborating on further potential areas of aging research collaboration in the region.

Obesity Research in the Philippines: Status and Gaps

Recognizing the value of country-specific research for national policy and program formulation, the Philippine Association for the Study of Overweight and Obesity (PASOO) undertook an exhaustive search and review of all existing research on overweight and obesity among Filipinos from 1981 to 2011, with the support of the Philippine Council for Health Research and Development (PCHRD).

With this work as the background, the ILSI SEA Region Philippine Country Committee collaborated with PASOO in conducting a seminar to disseminate the results of the review to the scientific community and stakeholders, identify important gaps in knowledge and recommendations for the conduct of priority scientific investigations, as well as promote research in this area. The seminar, "State of the Art of Obesity Research in the Philippines: Status and Gaps", was held on September 17, 2014, at the Bayanihan Center, Pasig City, Metro Manila.

The seminar started with Dr. Aveline Sue Ann Lim, of the Philippine Society of Endocrinology and Metabolism (PSEM), who first explained the background of the PASOO research work and the goal in conducting the search, which is to eventually **establish a national registry of obesity research among Filipinos**, both adults and children, as a basis of policy and program formulation in this area. A total of 217 relevant articles covering adults and children were reviewed, most of which dealt with epidemiology and risk factors, followed by screening and diagnosis, therapeutics, prevention and complications, and socio-cultural dimensions.

Next, Dr. Cecille R. de la Paz, PSEM, summarized the research among adults. **National data on prevalence showed an increasing prevalence of overweight (OW) and obesity (Ob), higher among females than among males.** Prevalence among specific population groups was shown by small scale studies. Among the most common risk factors studied were diet, physical activity, age, gender, ethnicity, socioeconomic status, and behavior.

A longitudinal study relating risk factors to obesity started in the '80s is still on-going in Cebu, Philippines and results of have been periodically published in international scientific literature. Small

scale studies on the prevention of obesity in schools and in the clinics have been reported, as have studies on diet, exercise, pharmacologic agents, and bariatric surgery. Local studies on complications of obesity including hypertension, DM Type II, metabolic syndrome, diastolic dysfunction, and sleep apnea have also been reported.

Dr. Jedeane M. Aragon of the Philippine Pediatric Society, summarized the research on overweight and obesity among children and adolescents. **National data on the prevalence of overweight from young childhood to adolescence show increasing prevalence over the last two decades**, from 2.4% in 1993 to 4.6% in 2008 among adolescents. Although standards on BMI and other anthropometric measures from WHO, CDC and International Obesity Task Force have been widely used, no local studies have been done to validate these standards among Filipino children. A good number of cross-sectional studies on the prevalence of OW and Ob among students in selected schools has been reported.

A few local studies have reported risk factors associated with childhood obesity including birth weight and gestational age, maternal BMI, dietary practices and physical activity, and socioeconomic factors. A few studies reported association between BMI and waist and hip circumferences, neck circumference and skinfold thickness. Some local studies have reported the results of different treatment modalities and their combinations to prevent and control childhood obesity, such as diet, exercise and behavioral modification. However, several papers reported association between BMI and respiratory, immunologic, metabolic and cardiovascular dysfunctions.

The second part of the seminar was a panel discussion and open forum among stakeholders from various fields, chaired by Prof. Nina Castillo-Carandang,

Department of Clinical Epidemiology, UP College of Medicine, to elicit their recommendations on priority research needs. Dr. Cecille A. Jimeno, PSEM President, suggested a second phase of the obesity research project, where the papers that were gathered would be reviewed in terms of their methodology, sample size, statistical methods, and validity of conclusions in order to filter those with acceptable scientific quality. Dr. Jimeno also suggested for PASOO to resume the gathering of on-going or completed research, and disseminate this periodically.

Ms. Nenet Umali of the Nutritionist-Dietitians Association of the Philippines proposed as a priority, **research to clarify the definition of obesity using standards and cut-off points applicable to Filipino adults and children**, or at least validate the recommendations from international and regional bodies. Studies on body composition among Filipinos will be of extreme help in this regard. Ms. Umali also wanted to see the prevalence of obesity in specific population groups and various environmental and behavioral settings. Studies on obese phenotypes among Filipinos will be of help in the practical application of nutrigenomics. The use of mobile devices arising from modern technology could be tested for use in the control of obesity such as in their application to consumer education.

Concluding the seminar, Dr. Rodolfo Florentino, Coordinator of the ILSI SEA Region Philippine Country Committee, summarized the most glaring gaps in obesity research identified during the seminar into three areas, namely, **(1) assessment methodologies and standards, (2) prevention strategies, and (3) management and control of obesity.** He ended with the hope that PASOO will pursue an on-going obesity research registry in the country, with the support of the government, principally the Philippine Council for Health Research and Development.

Upcoming Activity Highlights

Meetings

8th Scientific Seminar on Food Innovation/Renovation for Healthier Food Choices: Approaches for Effective Implementation November 4, 2014, Renaissance Kuala Lumpur Hotel, Kuala Lumpur, Malaysia

The WHO Global Strategy on Diet, Physical Activity and Health has called for the private sector to be a significant player in promoting healthy diets and physical activity. The food industry, retailers and catering companies could become partners with governments and non-governmental organizations in implementing health-promoting measures aimed at encouraging healthy eating and physical activity. Initiatives identified include efforts by the food industry to innovate and renovate to make healthier food choices available. This includes reducing fat, sugar and salt content and portion sizes of processed foods as well as increasing the introduction of innovative, healthy and nutritious choices. In Malaysia, various national action plans have also highlighted the importance of food innovation/renovation to make healthier food choices available to the consumer. This one-day seminar, organized by the ILSI SEA Region Malaysia Country Committee, will discuss industry efforts to innovate/renovate processed foods to provide healthier alternatives to the public, including the successes and challenges, as well as focusing on consumer awareness and acceptance of healthier food choices.

Seminar and Workshop on Vitamin D in Nutrition and Health November 11-12, 2014, Hilton Hanoi Opera Hotel, Hanoi, Vietnam

Vitamin D is an essential nutrient, well known for its role in skeletal health. While Southeast Asian nations are situated near the equator, recent studies in this region have shown that deficiency of this vitamin is highly prevalent across all age groups, particularly in children. At the same time, the growing body of research examining the broader role of vitamin D in health beyond skeletal health has been gaining interest among the health and nutrition community. Currently, there is scientific debate about the optimal requirement level for vitamin D, with some nations revising recommended intake. More research in this area, including on appropriate cut-offs for assessment of vitamin D status, is clearly required. More importantly, awareness of vitamin D deficiency, its health implications and corrective actions need to be raised and addressed in the Southeast Asian region.

Pre-CCNFSDU Event: ILSI Southeast Asia Region Seminar on Scientific Substantiation of Claims November 22, 2014, Discovery Kartika Plaza Hotel, Bali, Indonesia

Health claims are important tools used to communicate the health benefits of a food product to consumers, providing point-of-sale information to assist them in making informed choices. Globally, there is wide disparity between permitted claims across countries, and the process and requirements used to substantiate these claims. This presents a number of challenges for key stakeholders including regulatory bodies, industry and researchers. This half-day seminar, held prior to the 36th Session of the CCNFSDU, will review the current status and substantiation process for claims in the EU, Japan and Southeast Asia, and provide an update on new biomarkers and parameters for evaluating health benefits.

Seminar and Workshop on Food and Feed Safety of Genetically Engineered Crops Containing Stacked Traits November 28, 2014, Singapore & December 1, 2014, Indonesia (TBC)

Stacking of two or more biotech traits through conventional breeding methods is becoming an increasingly common trend in recent years. It has been estimated that up to 26 percent of genetically engineered crops grown worldwide are stacked products. While many of the individual biotech traits contained in stacked products have already been assessed for safety, there have been scientific discussions regarding whether stacking of such traits would result in any additional risks. To address some of these questions, this series of seminars and workshops in Singapore and Indonesia will provide an overview on the evolutionary development and advances in plant breeding techniques over the years, and how this is relevant to scientific considerations for the safety assessment of genetically engineered crops containing stacked traits.

Seminar and Workshop on Food Allergens – Science and Challenges in Southeast Asia April, 2015, Bangkok, Thailand (TBC)

Food-related allergies are becoming an emerging public health issue in Southeast Asia, with an increasing number of incidences being reported. However, it is currently not immediately clear as to which types of food allergens are of most public health relevance to Southeast Asian population groups. While some countries have adopted mandatory allergen requirements at the national level, there are no existing risk-based guidelines for local food industries to follow in order to label trace allergens that may exist due to adventitious presence. Recognizing the need for further scientific understanding on some of these issues, the seminar and workshop will aim to share relevant information on the science and risk assessment of food allergens, as well as successful risk management initiatives that have been developed and implemented in other regions and countries.

ILSI SEA Region Calendar of Activities 2014 – 2015

Meetings		Research & Collaborative Projects	
8 th Scientific Seminar on Food Innovation/Renovation for Healthier Food Choices: Approaches for Effective Implementation	November 4, 2014 Kuala Lumpur, Malaysia	Investigation of Commodity Food Standards and Methods of Analysis in East Asia <i>In collaboration with ILSI Japan, ILSI Focal Point China, ILSI Korea, ILSI India and ILSI Taiwan</i>	On-going
Seminar and Workshop on Vitamin D in Nutrition and Health	November 11-12, 2014 Hanoi, Vietnam	ASEAN Risk Profile for Aflatoxins in Peanuts	On-going
Pre-CCNFSDU Event: Seminar on Scientific Substantiation of Claims	November 22, 2014 Bali, Indonesia	Systematic Review on Salt Sensitivity: Is there a Genetic Pre-disposition that Predicts Cardiovascular Disease Risk? <i>In collaboration with CSIRO, Australia</i>	On-going
Seminar and Workshop on Food and Feed Safety of Genetically Engineered Crops Containing Stacked Traits	November 28, 2014 Singapore; December 1, 2014, Indonesia (TBC)	Estimation of Sodium Intake among Filipinos and their Sources in the Diet <i>In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines</i>	On-going
ILSI Annual Meeting 2015	January 16-21, 2015 Chandler, Arizona, USA	Validation of WHO Complementary Feeding Indicators against Dietary Intakes of Malaysian Children Aged 6-23 months <i>In collaboration with International Medical University (IMU), Malaysia</i>	On-going
ILSI Southeast Asia Region Annual Meeting and Scientific Symposium	April 9-10, 2015 Singapore	Scoping Review on Sugar Intake in Southeast Asia: Levels of Consumption and Major Sources in the Diet	On-going
Seminar and Workshop on Food Allergens – Science and Challenges for Southeast Asia	April 7-8, 2015 Bangkok, Thailand	Data Analysis: Levels and Sources of Sugar Intake in the Philippines <i>In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines</i>	On-going
9 th Seminar and Workshop on Nutrition Labelling, Claims and Communication Strategies	2nd Quarter, 2015 Manila, Philippines	Risk and Benefits of Intense Sweeteners – Attitudes and Perceptions of Food Experts and Opinion Leaders	On-going
Conference on Microbial Food Safety and Emerging Pathogens	2015 (TBC)	Database on Functional Foods and Ingredients in Southeast Asia: Background Information and Link to Studies	Upcoming
		Systematic Review of Infant and Young Child Feeding Practices in Southeast Asia	Planned
		Food Consumption Data: Sources and Methodologies in the SEA Region	Planned
		Vitamin D Status of Pregnant Adolescents in Southeast Asia	Planned

Publications

Intake of Added Sugar in Malaysia: A Review	Submitted to WHO South East Asia Journal of Public Health -undergoing peer review
Seminar Proceedings: Adolescent Pregnancy and the First 1000 Days (the Philippine Situation)	Submitted to Asia Pacific Journal of Clinical Nutrition – undergoing peer review

ILSI SEA Region Seminar on Vitamin D In Nutrition And Health

November 11, 2014

Hilton Hanoi Opera Hotel, Hanoi, Vietnam



Vitamin D is an essential nutrient, well known for its role in skeletal health. While Southeast Asian nations are situated near the equator, recent studies in this region have shown that deficiency of this vitamin is highly prevalent across all age groups, particularly in children. At the same time, the growing body of research examining the broader role of vitamin D in health beyond skeletal health has been gaining interest among the health and nutrition community.

Currently, there is scientific debate about the optimal requirement level for vitamin D, with some nations revising recommended intake. More research in this area, including on appropriate cut-offs for assessment of vitamin D status, is clearly required. More importantly, awareness of vitamin D deficiency, its health implications and corrective actions need to be raised and addressed in the Southeast Asian region.

Objectives

This important one-day seminar will:

- Provide an update on the multiple potential health benefits of vitamin D
- Update on status of vitamin D among populations in SE Asia and optimal levels
- Provide an overview of current understanding of the physiological role of vitamin D in human nutrition across the life cycle
- Examine the role and importance of sources of vitamin D – sunlight vs food vs fortification vs supplementation
- Update on issues related to assessment of vitamin D status and discuss the development of recommended intakes for vitamin D

Seminar Topics

Opening Plenary

- Research Update: Vitamin D and Human Health – Bones and Beyond
- Vitamin D Status in Vietnam
- Vitamin D Status and Developing Recommendations for the SEA Region

Session 1: Vitamin D Through The Life Cycle

- Influence of Maternal Vitamin D on Birth Outcomes/Offspring
- Vitamin D and Child Growth/Health
- Importance of Vitamin D in Healthy Ageing

Session 2: Vitamin D – Intakes, Sources And Measurement

- Sunlight – Benefits vs Risks/Barriers to Exposure and How Much Do We Need?
- Food Sources of Vitamin D/Fortification/Supplementation in SE Asia
- Methodologies and Cut-offs for Measuring/Evaluating Vitamin D Status

Who Should Attend

Nutritionists and dietitians, researchers, academia, government and regulatory officials, food and supplement industry personnel, and others seeking current information on vitamin D and health.

Registration Fee

	Local Participants	Overseas Participants
Industry	VND 2,500,000	USD 180
Government/ Academia/NGO	VND 1,000,000	USD 120

Registration Details

For inquiries, registration and payment details please contact:

For local participants:

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Visit us at www.ilsi.org/sea_region to find out more about our upcoming activities and programs.

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