

Science InSight

News and Updates on Nutrition, Food Safety and Health



Sugar and Sweeteners Science, Innovations and Consumer Guidance

Food and Nutrition Security Improving nutritional quality of crops through plant breeding technologies
Dietary Reference Intakes Philippines launches new 2015 Dietary Reference Intakes
Health Promotion Promoting healthier diets through food innovations and renovations
Food Composition Data Improving the quality of food composition data in ASEAN

From the Executive Director



Welcome to Science InSight, ILSI SEA Region’s biannual newsletter featuring highlights of our scientific meetings and activities over the past six months. In this issue, we share with you our activities organized from October 2015 to March 2016.

With continued concern among health authorities and international agencies over the challenges posed by rising rates of obesity and non-communicable diseases among populations in Asia, ILSI SEA Region organized a timely series of seminars around the region on science and health issues relating to sugars and sweeteners. Seminars were held in four countries – Singapore, Australia, Thailand and Vietnam. Important issues discussed included the levels of sugar consumption in Southeast Asia and Australasia, consumer attitudes and behavior trends, consumer perceptions on sweeteners, as well as product reformulation and innovation to encourage healthier diets. Key outcomes from the meetings included the identification of research gaps, as well as recognition that the total diet, as opposed to single nutrients, should be an important focus for long-term health improvement.

Other activities included workshops held in Singapore and Thailand where experts shared the latest advancements in plant breeding techniques for crop improvement and enhancement of the nutritional value of food crops. In conjunction with the launch of new Dietary Reference Intakes in the Philippines, ILSI SEA Region organized a seminar in collaboration with stakeholders in government, industry and academia to understand the principles and basis for the new DRIs as well as its applications in policy and health promotion programs.

For ILSI SEA Region’s upcoming meetings in 2016, brief highlights and a calendar schedule have been included in this publication. We look forward to your active participation in our programs, and thank you for your continued support!

Boon Yee Yeong
Executive Director, ILSI SEA Region

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Sugar and Sweeteners: Science, Innovation and Consumer Guidance

Sugar serves an important role in imparting sweetness and functional properties in food and final food products after processing. However, in light of increasing caloric intake and declining energy expenditure, sugar is increasingly seen as one of the main contributors to rising obesity rates in Asia. Concerned international agencies and regional health authorities are therefore recommending measures to substantially lower sugar intake. Low- and non-caloric sweeteners (LNCS) are alternatives to sugar that have the potential to reduce the caloric content of foods. Nevertheless, despite numerous scientific studies and safety evidence, controversies on the use of certain sweeteners remain.

In October and December 2015, ILSI SEA Region organized a series of scientific meetings in Singapore, Australia, and Vietnam, covering the science and health-related issues on sugars and sweeteners. Experts addressed intake patterns, safety concerns, consumer perceptions and best practices in promoting healthier diets for overall health promotion.

Singapore

The one-and-half day **Symposium on Sugar and Sweeteners: Science, Innovation and Consumer Guidance** in collaboration with the Clinical Nutrition Research Center, Singapore. Held on October 27-28, 2015, the symposium was well attended by more than 120 regulatory, food, and nutrition specialists from the industry, government, and academia.

The symposium reviewed and discussed the role and current scientific evidence on the health effects of sugar and sweeteners. It also examined the trends, levels, and sources of intakes of added sugar and sweeteners in Southeast Asia, and discussed dietary guidelines on sugar consumptions and consumer perceptions of sweeteners in SEA and other countries. Additionally, the symposium explored and identified opportunities and challenges in products innovation for sugar reductions, as well as identified research gaps, limitations of current evidence and recommendations to address future guidance.



Sugar and Sweetness

Dr. Ciarán Forde, Clinical Nutrition Research Center (CNRC), Singapore, opened the symposium with the **presentation on perception and preference for sweetness, and links to dietary behavior**. He shared that sweetness perception and preference play important roles in food choice, energy intake regulation, and habitual dietary behaviors. LNCS provide an opportunity to maintain sweetness levels while reducing calorie intake.

The **physiological and pathological effects of sugars** were introduced by Prof. Luc Tappy, University of Lausanne, Switzerland. Most epidemiological studies have demonstrated a positive relationship between sugar or fructose intake and body weight, though Prof. Tappy noted that such positive associations have been found with the intake of non-sweetened foods too. He emphasized that ultimately, caloric balance is the determining factor of weight

maintenance, regardless of the source of calories. Regarding the increasing concern over the effect of sugar on liver health, Prof. Tappy shared that non-alcoholic fatty liver disease (NAFLD) development is more likely to be related to excess caloric consumption than to high fructose consumption.

Next, Emeritus Prof. Geok Lin Khor, Universiti Putra Malaysia (UPM), Malaysia, shared the historical and **traditional use of sugar in Southeast Asian foods** and noted the **dietary changes in transitioning societies**. She noted that diets in developing countries have shifted to a greater reliance on processed foods, increased use of edible oils and sugar-sweetened beverages, without balancing energy expenditure through physical activities. This has had a huge impact on the rising prevalence of obesity and chronic non-communicable diseases. Prof. Khor concluded that the solution not only requires the population to decrease the consumption of total calories but to



increase the proportion of calories from a diversity of staple carbohydrate sources.

Dr. Sofia Amarra, ILSI SEA Region, Singapore, presented on ILSI SEA Region's research project reviewing **sugar intake levels in Southeast Asia**, mainly Indonesia, Malaysia, the Philippines and Thailand, based on consumption levels and sources of added sugar intake of the various populations. Dr. Amarra concluded that there was insufficient existing evidence to accurately establish the sources and levels of added sugar intake in the region. She also noted the need for up-to-date and accurate information on sugar intake levels and sources in Southeast Asia.

The evidence-based **research on sugars, health outcomes and future research needs** was presented by Prof. Mei Chung, Tufts University School of Medicine, USA. She shared the commissioned systematic review and meta-analysis results which examined the effect of different levels and forms of dietary fructose on the incidence or prevalence of non-alcoholic fatty liver disease (NAFLD) and on indices of liver health in human. Prof. Chung concluded that there was insufficient robust evidence in the observational and intervention studies to verify the "fructose hypothesis". She explained that this systematic review led to a Future Research Needs (FRN) project that involved a diverse stakeholder panel to prioritize the direction of future research.

Dr. E-Siong Tee, TES NutriHealth Strategic Consultancy, Malaysia, gave a presentation on the practical considerations regarding the **guidelines on reducing intake of free sugars**. In 2015, the World Health Organization (WHO) released strong recommendations for both adults and children to reduce their intake of free sugars to less than 10% of their total energy intake. Dr. Tee discussed the challenges in communicating these recommendations to the public. Dr. Tee recommended that future research should identify the level and main sources of sugar intake of population groups so as to have more effective and targeted interventions. Concomitantly, developing food composition databases

with reliable data on the sugar content of a wide variety of foods and beverages is crucial.

Low and Non-Caloric Sweeteners

Prof. Dedi Fardiaz, Bogor Agricultural University, Indonesia, gave an overview of the **development, trends, and uses of LNCS in food and beverages**. LNCS have been used as alternatives to sugar because they provide sweetness with very low or no calories. Unfortunately, individual sweeteners have sensory limitations; for example, many LNCS impart metallic or bitter aftertastes and do not give the body that sugar provides. Prof. Fardiaz recommended that these sensory factors should be considered when producing acceptable re-formulated sweetened products.

The next presentation by Dr. Paul Brent, Global Food and Chemical Risk Assessment and Risk Management Solutions, Australia, discussed **approaches to the safety assessment of LNCS**. Dr. Brent explained that in assessing if there is a potential public health problem posed by food additive consumption, both the short- and long-term toxicity of the additive as well as the level of exposure to the additive for all population groups are considered. Dr. Brent encouraged developing countries to adopt the work completed by other more advanced risk assessment agencies such as FSANZ and the European Food Safety Authority (EFSA), instead of replicating their efforts in order to save valuable resources.

Prof. Adam Drewnowski, University of Washington, USA, presented on the **intake trends, diet quality impact, and health effects of LNCS**. Using data mostly from the US National Health and Nutrition Examination Survey (NHANES), he showed that in the US, consumers with the intent to lose or maintain their weight a year ago were more likely to use LNCS, which suggested reverse causality as a more likely explanation. To conclude, Prof. Drewnowski emphasized that the totality of dietary choices and health behaviors,

together with the intent to lose weight, may be the best predictor of health outcomes.

Prof. France Bellisle, Université Paris 13, France, presented some **perspectives on using LNCS to manage appetite and weight** by sharing several recent studies. A systematic review conducted recently concluded that a considerable weight of evidence supports the substitutional use of LNCS instead of sugar to help reduce relative energy intake and body weight. From the scientific evidence presented, Prof. Bellisle concluded that there is no confirmation of LNCS exacerbating appetite (liking, wanting, ingesting) for sweetened products or inducing loss of control over eating. Rather, the evidence suggested decreased appetite for sweet products.

Next, Dr. Danielle Greenberg, PepsiCo Incorporated, USA, spoke about the **impact of LNCS on appetite control and its implications on innovation**. Dr. Greenberg cautioned against claims of LNCS having an "intense" sweetness in the normal food and beverage usage by citing data that demonstrate how LNCS never reach the same levels of sweetness as sucrose because bitter compounds overpower sweet ones after a certain concentration. The food and beverage industry has responded to demands for lower calorie foods by either completely or partially replacing sugar with LNCS in their products. Dr. Greenberg, however, pointed out that there remains challenges in discovering the perfect profile of sweetener to suit consumer demands.

Product Innovation and Consumer Guidance

Ms. Ann Low, Health Promotion Board (HPB), Singapore, shared **government perspectives and expectations on food innovation and renovation**. In response to rising obesity rates in Singapore, HPB has adopted the "whole-of-supply-chain" approach. Ms. Low explained that this approach is an iterative process of inculcating awareness among consumers; encouraging product innovation to broaden the choices of healthier foods;

leveraging with partners in the retail, F&B, and manufacturing sectors; and driving consumer demand through education.

An innovative approach to **reduce energy intake and maintain satiety through enhanced sensory properties of food** was shared by Dr. Keri McCrickerd, CNRC, Singapore. Dr. McCrickerd shared that taste intensity has been shown to affect food intake, independent of palatability. She also suggested that texture might play an even bigger role in determining food intake regulation, as texture determines food consumption rate. Dr. McCrickerd recommended to first identify the foods and beverages that could benefit from sensory modifications, followed by understanding how sensory modifications can be combined with energy reduction to optimize satiety. She emphasized that there is a need to determine the longer term impact of 'sensory-enhanced' foods and beverages for weight management.

Dr. Trinidad Trinidad, Food and Nutrition Research Institute–Department of Science and Technology (FNRI-DOST), Philippines, presented the **sugar composition and glycemic indices (GI) of natural indigenous sweeteners commonly available in Asia**. A study conducted by her research team classified coconut sap sugar, coconut sap syrup, and kaong sugar as low GI (≤ 55), which could be beneficial for managing obesity and type II diabetes. Dr. Trinidad noted that the higher inulin and fructose content than glucose of these natural indigenous sugars might account for their low GI. This suggested that coconut sap sugar/syrup consumption might contribute to lower cardiovascular disease risk.

Prof. Latifah Amin, University Kebangsaan Malaysia, Malaysia, shared the results of a **study that surveyed the knowledge and perception of Malaysian health professionals on the benefits and risks of sweeteners compared to sugar**. The results of the study showed that the surveyed opinion leaders were generally more supportive of 'natural' LNCS such as stevia compared to 'artificial' sweeteners and even sugar. The opinion leaders also believed that Malaysian consumers prefer sugar over other sweeteners in their diet, even though they agreed that consumers now perceive sugar to be harmful as a result of media coverage and communication from health authorities.

Dr. Eunice Pang, HPB, Singapore, presented on **consumer perceptions regarding the Healthier Choice program and the use of LNCS in Singapore**. Dr. Pang shared that results from a survey investigating consumer perception of LNCS use in Singapore show that although

there was a high awareness of LNCS among Singaporean respondents, many (> 50%) wrongly believed that LNCS are the same as sugar and that they are found in regular soft drinks. The survey also found that consumers were generally uncomfortable buying products with LNCS because they are "made from chemicals/not natural" and may have long-term negative effects. Dr. Pang shared that HPB continues to explore ways to reduce sugar in the context of broader dietary improvements and will look into further education need for appropriate communication on sweeteners and their use.

A recent focus group study investigating **consumer knowledge and perception of LNCS in Singapore** was shared by Ms. Pauline Chan, ILSI SEA Region, Singapore. The study aimed to understand the knowledge and perceptions related to LNCS, and at the same time to assess the effectiveness of LNCS-related educational messages in changing consumers' views on LNCS. Most of the consumers interviewed had little knowledge about how LNCS are made and processed by the body, as well as whether there is a safe intake level. In addition, they classified LNCS as "artificial" and therefore will likely have side-effects. Overall, the study showed that educational messages on LNCS should address the knowledge gaps of consumers about LNCS.

Dr. Roseline Yap, Nutrition Society of Malaysia (NSM), Malaysia, presented on the role of NSM in **educating consumers about sugar reduction**. Dr. Yap noted that the 2010 Malaysian Food-Based Dietary Guidelines (FBDG) recommend the population to "consume foods containing sugar less frequently" and to "check [the] nutrition information panel on labels of beverages for sugar content". While NSM has not implemented a dedicated sugar-reduction campaign, messages on sugar reduction is consistently featured in their education materials including leaflets, booklets, and recipe books. Dr. Yap also shared that NSM is committed to continue reinforcing the programs and activities in the upcoming National Plan of Action for Nutrition (2016-2025).

The final presentation by Dr. Olivier Roger, Nestlé R&D, Switzerland, discussed **industry perspectives on the challenges and opportunities for product innovation and reformulation**. Dr. Roger elaborated on some sugar reduction strategies, including educating consumers on portion sizes, gradually reducing sugar similar to the salt reduction program in the UK, and reformulation via total or partial replacement of sugar with sweeteners. Dr. Roger shared that changing the physical structure of sugar is an emerging research that could advance sugar reduction efforts.

He also shared the emerging research on potential sweeteners that have similar sweet tastes as sucrose, but do not contribute to calories. However, the long-term safety of consuming high amounts of these new sugar ingredients is still unknown, and Dr. Roger emphasized the need for further research in this area.



Key Conclusions

- Based on the studies and findings presented at the symposium, the experts concluded that the total diet, as opposed to a single macronutrient such as sugar, should be the focus for population health improvement in the long run.
- There is insufficient existing evidence to accurately establish the sources and levels of added sugar intake in the region. Up-to-date and accurate information is needed, and the development of food composition databases with reliable data on sugar content of a wide variety of food and beverages would be crucial.
- Some studies suggest that the use of sweeteners instead of sugar can help to decrease appetite for sweet products.
- While food-based dietary guidelines in most of the ASEAN countries provide key messages on reducing sugar intake in an effort to diminish the risk of obesity and chronic diseases, communication and education are important strategies to help consumers better understand the use and safety of sweeteners.
- There are various challenges for product innovations and renovations to reduce sugar in food products. Palatability, taste intensity, texture and other sensory factors need to be considered.



Ms. Megan Cobcroft, Mr. Bill Shrapnel, Ms. Sarah Hyland, Ms. Danielle Baird, Dr. Alan Barclay, Ms. Kim Tikellis

Australia

The seminar on **Sugar in the Diet: Is There a Sweet Spot?** was held on October 30, 2015 in Sydney, Australia.

Sugar and Health

Prof. Luc Tappy presented an **overview of current global sugar research**. Epidemiological and short-term studies demonstrated the role that sugar sweetened beverages play in the pathogenesis of metabolic diseases. Although mechanistic and intervention studies suggest high fructose intakes can lead to adverse metabolic effects, no safe upper limit level has been defined. Studies investigating the hedonistic effects of sugar in terms of inducing satiety or appetite stimulation report conflicting results, highlighting the complexities of homeostatic responses underlying physiological responses to food intake, such as the influence of taste receptors. Prof. Tappy proposed the need to consider various components such as fibre content, glycaemic load or wholegrain foods, in seeking appropriate carbohydrate sources to replace sugar.

Dietary Guidelines on Sugar

Mr. Bill Shrapnel, Shrapnel Nutrition Consulting, discussed the **evolution of the sugar and health debate**. He attributed this to health messages from the Australian Dietary Guidelines over the past 35 years, focusing on low fat and relatively high carbohydrate diet, resulting in insufficient emphasis on lowering sugar intake. While sugar has been noted as a risk factor for developing dental caries by Australian and global health organisations, Mr Shrapnel recommended a more comprehensive review of current literature investigating the health effects of high carbohydrate diets on cardiometabolic health.

Dr. Alan Barclay, Consultant Dietitian and Nutritionist, noted that in 2014, a World

Health Organization (WHO) meta-analysis showed that increased sugar intake was associated with weight gain but no evidence of a dose-response association was found. Dr Barclay noted that Dietary Guidelines have always recommended strategies to eat less added sugar. In 2015, WHO recommended reduction of free sugars to less than 10% of total energy intake with suggested further reduction to below 5%.

Sugar Consumption in Australia

Ms. Danielle Baird, Research Project Officer, CSIRO Food and Nutrition, presented **data on 'apparent' and 'actual' Australian sugar consumption**. Data sourced from Australian Bureau of Statistics (ABS) and McNeill & Shrapnel showed a decline of 13% in apparent sugar consumption from 1939 - 2011. This trend was also reflected in actual consumption data from the Australian Health Survey 2011-13, which draws on self-reported consumption data from the National Nutrition and Physical Activity Survey 2011/12. Overall, Australians consumed an average 105 grams (g) of total sugar daily, with males being the larger consumer at 116g total sugar /day compared to females at 94g/day.



Policy Perspective

Ms. Megan Cobcroft, Principal Policy Analyst Food Policy, New South Wales (NSW) Ministry of Health, presented the **steps taken by NSW Health to develop a policy position for sugars and implementation recommendations aligned to the NSW Healthy Eating and Active Living Strategy 2013-2018**. This includes a review of healthy food provision guidelines for hospitals and schools in NSW using data from the Australian Health Survey 2011/12, and evidence statements from the Australian Dietary Guidelines 2013 (NHMRC). The results appear to show strong evidence of adverse effects on body weight from consuming sugar sweetened beverages, and sufficient evidence to recommend reducing energy dense, nutrient poor food sources with more than 50% of total and added sugars.

To substantiate sugar consumption intake data from the Australian food supply, further analysis of dietary data from the Australian Health Survey, and Health Star Rating (HSR) system will be included in the review process. Future health campaigns will promote reducing consumption of energy dense and nutrient poor foods, and increasing water intake to replace sugar sweetened beverages. A review on utilizing the HSR system to support policy implementation will also be completed.

Consumer Attitudes and Behavior Trends

Ms. Sarah Hyland, Research Director, Colmar Brunton, presented on **consumer attitudes, behaviours and trends**. She noted that while obesity rates have been increasing globally over time, there is no evidence linking any specific nutrient or food to addictive behavior. In a French study, participants with high sweet taste preferences were less likely to become obese and were more likely to consume natural sources of sugar. She concluded

that consumers report being confused and many would like to reduce their sugar intake with proper guidance.

Ms Caitlin Reid, Dietitian, Health and the City, presented on **what dietitians and consumers need to know**. She explained that consumers turn to celebrities and food bloggers for nutrition and wellness advice as the messages are relatable and easily understood. She proposed that credibility of dietitians has over time declined due to their association with food companies. Raising awareness of the role of dietitians in food industry will help increase consumer trust. Consumers on the other hand need to understand that apart from sugar, foods may contain other nutrients such as fat and salt. They need to know that sugar has a number of technical roles in foods, for example enhancing flavor, preservation, fermentation, colour, gelling and increasing softness. She concluded that portion size is the key and added sugar can be enjoyed when eaten in moderation and mindfully.

Vietnam

A half-day **Seminar on Sweeteners: Uses and Safety** was organized in collaboration with the Vietnam Food Administration (VFA) and held on December 14, 2015 in Hanoi, Vietnam. The seminar covered key issues related to sweeteners including its technological uses and functions, the role it plays in health, consumer perception of sweeteners, as well as risk assessment and safety aspects of sweeteners.

Sweeteners: Uses and Consumer Perception

Prof. Dedi Fardiaz, Bogor Agricultural University, Indonesia, gave a presentation on **Introduction to Sweeteners and their Uses in Food and Beverages**, where he explained that polyols are used in food to impart sweetness, bulk, texture, moisture, and a cooling sensation. Although high intensity sweeteners impart sweetness like sucrose, these compounds have distinct flavor profiles in terms of body, fruitiness, bitterness, aftertaste, astringency, and saltiness. Hence, although high intensity sweeteners can impart the same levels of sweetness as sucrose, they may also impart bitter and/or metallic aftertastes, lingering sweetness, and a lack of mouthfeel. Prof. Fardiaz concluded by emphasizing the need to consider total flavor acceptability, and not only sweetness, when formulating sweet products using sweeteners.

The next presentation by Prof. Le Bach Mai, National Institute of Nutrition, Vietnam, discussed the **role of sweeteners in health**. Prof. Mai explained that artificial sweeteners may confer the following

health benefits: (i) weight management, (ii) providing an alternative to sugar for diabetics, and (iii) maintaining good dental health. Scientific studies have shown sweeteners to be effective in reducing energy intake and weight, although Prof. Mai cautioned that since most existing research are short-term, there is a need for more data to determine long-term effectiveness. She highlighted that Vietnamese people are partial to sweet foods and consume a lot of sugar in their diet. Artificial sweeteners are therefore useful sugar substitutes that allow the Vietnamese people to enjoy sweet foods without increasing blood glucose levels. Prof. Mai also discussed the benefit of using low-calorie sweeteners in maintaining good dental health, especially in light of poor dental health among the Vietnamese resulting from low calcium intake.

Safety Assessment of Additives and Sweeteners

In the second session, Mr. Nguyen Xuan Truong, VFA, Vietnam, gave an update on the regulations on **food additives in Vietnam**. In total, 407 food additives are in the food additives list, including 5 sweeteners. Food additives which are not in the list but are in Codex can still be approved by VFA for declaration. Mr. Nguyen also explained the procedures for food additive declaration, which differs depending on whether the food additive is to be circulated in the market or used internally within companies.

Ms. Norhidayah Othman, Ministry of Health, Malaysia, gave a presentation on the **regulation on sweeteners in Malaysia** to provide an update on the new proposed amendments for sweeteners. Sweeteners are currently classified as commodities, not food additives, under Part VIII of the Food Regulations 1985 of Malaysia. In line with efforts to harmonize with Codex standards, five amendments have been proposed. First, the definition of "food additive" is to include sweeteners. Second,

regulations on artificial sweetening substance, non-nutritive sweetening substance, and aspartame, glycerol, and sorbitol are to be replaced with a new regulation on sweetener. Third, regulation on stevia extract is to be removed, and the purity standard of stevia is to follow the recommendations by the Joint Food and Agriculture Organization of the United Nations and World Health Organization (FAO/WHO) Expert Committee on Food Additives (JECFA). Fourth, the labeling requirement has been changed from requiring food labels to declare the sweetening substance's name into stating the presence of a sweetener, followed by the INS number in brackets. Finally, regulations on sugar confection and fruit jelly have been amended to remove statements referring to sweeteners.

The last presentation by Dr. Berna Magnuson, Health Science Consultants, Canada on **global regulatory approvals and safety assessments of sweeteners**, shared that all sweeteners not found in nature are classified as "food additives" and therefore must undergo risk assessment by an independent scientific body before approval for use in the market. An extensive number and wide range of toxicology tests are required to define the dose that does not induce any adverse effect(s) during the different stages of the life cycle, known as "No Observed Adverse Effect Level (NOAEL)". From the NOAEL, an Adequate Daily Intake (ADI) is established by incorporating a safety factor. Dr. Magnuson emphasized that because of the safety factor, the ADI is a very conservative number. So far, all sweeteners have been found to have no adverse effects at levels consumed and regulatory agencies worldwide continue to review and confirm the safety of use.



Improving Plant Breeding Techniques for Food and Nutrition Security

With increasing urbanization and the impact of global climate change, Southeast Asia faces increasing challenges to provide sufficient, safe and nutritious food to its people in the coming decades.

Conscious of these emerging challenges, leaders of ASEAN countries recently laid out their ASEAN Community Vision 2025, which emphasizes the need to develop a food and agriculture sector within ASEAN that is competitive, inclusive, resilient and sustainable, and which ultimately contributes to food and nutrition security for the region.

Recognizing some of these challenges for the region, ILSI SEA Region organized a series of seminars on **Crop Improvement for Food and Nutrition Security in Southeast Asia: Opportunities and Challenges for Gene Stacking and Other Plant Breeding Techniques**, which were held in Singapore and Bangkok, Thailand, on November 20 and November 23 respectively. In Singapore, the meeting was organized together with the Genetic Modification Advisory Committee (GMAC) of Singapore and in Thailand, with the National Agency for Genetic Engineering and Biotechnology (BIOTEC) of the National Science and Technology Agency (NSTDA) in Thailand. Support for both meetings was also provided by the United States Department of Agriculture (USDA).

To provide an understanding of the overall context underlying the topic of the seminar, the opening presentations on the **Challenges for Food and Nutrition Security and the Role to be Played by Crop Improvement** were shared by Prof. Paul Teng from Nanyang Technological University in Singapore; and by Prof. Songsak Srianujata from Mahidol University, Thailand together with Prof. Prasartporn Smitamana from Chiang Mai University in Thailand.

It was noted that Southeast Asian countries are generally regarded as being low in food security, despite them also being major producers of agri-food products such as rice, fruits and vegetables, as well as seafood. Many Southeast Asian countries also face problems of malnutrition, which include both under-nutrition and over-

nutrition. This situation is caused by a number of supply and demand factors.

On the supply-side, these include a declining and ageing farmer population, deteriorating agricultural performance and unstable crop yields, environmental degradation, as well as climate change; while on the demand side, there is an increasing demand for food due to urbanization and increasing incomes, which has also led to dietary changes that increase the demand for more diverse and high protein foods.

One solution that has been put forward to address some of these challenges is through the genetic improvement of food crops, so that they can provide better yields and improved nutrition. Through such genetic improvements, food crops are able to gain resistance to biotic stressors (weeds, insect pests, diseases) and abiotic stressors (drought, flooding and salinity), which would help to increase crop yields.

On the other hand, genetic improvements that raise the nutritional quality of food crops can also help to address ongoing nutrition issues, in particular for micronutrient deficiencies.

Following the opening papers in both Singapore and Thailand, Mr. Ashish Wele from HarvestPlus, which is part of the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH), shared ongoing efforts by HarvestPlus in developing more nutritious food crops, through his paper on **Improving Nutrition Quality of Food Crop using Conventional Plant Breeding Techniques – Opportunities**



and Challenges. Mr. Wele explained that micronutrient deficiencies, such as for Vitamin A, iron and zinc, afflicts many countries particularly in the developing world. The strategies and means available to address this type of 'hidden hunger' include direct micronutrient supplementation, commercial fortification of foods, increasing dietary diversity, as well as through agricultural intervention via biofortification of food crops.

In this regard, HarvestPlus is working on the agricultural intervention strategy by developing biofortified staple crops through conventional breeding methods that can provide sources of micronutrients in the diet. The type of biofortified crops released by HarvestPlus in different countries are specifically targeted towards the needs for each country and also take into account the cost-effectiveness of such an intervention.



Speakers and organizers of the seminar, (L to R) Prof. Wayne Parrott, Prof. Paul Teng, Mr. Ashish Wele, Dr. Donald Mackenzie, Mr. Geoffrey Smith, Mr. Keng Ngee Teoh and Mrs. Boon Yee Yeong

The biofortification programs implemented by HarvestPlus have so far been successful, largely because of a holistic strategy that includes the development of the crop, raising awareness and encouraging adoption of the crop by farmers, and finally scaling up and mainstreaming the product through multiple local and international partnerships.

While HarvestPlus primarily uses conventional breeding techniques for biofortification, other organizations such as the International Rice Research Institute (IRRI) have adopted genetic engineering techniques to do so. Dr. Donald Mackenzie from IRRI shared a presentation on **Improving Nutritional Quality of Crops using Genetic Engineering Techniques – Opportunities and Challenges**, and explained some of the reasons for applying genetic engineering for biofortification.

Dr. Mackenzie shared that genetic engineering techniques can be useful in specific circumstances, such as when the targeted level for a particular nutrient is above the range of natural variation of the nutrient present naturally in the crop species (for e.g. pro-vitamin A, folate and iron in rice); as well as when a particular crop species is difficult to breed through conventional means (for e.g. banana, cassava and potato that are vegetatively propagated).

However, the usage of genetic engineering techniques for biofortification comes with additional challenges such as certain unique product development considerations; the need to consider regulatory implications and safety assessment requirements; and the need for public acceptance of foods that have been produced through genetic engineering. In the case of Golden Rice, IRRI has developed a specific regulatory strategy to address these considerations, which includes targeting specific countries for cultivation (Bangladesh, Indonesia and the Philippines); submitting

separate applications for food/feed approvals versus cultivation approvals; and implementing efficacy studies only after receiving food/feed approvals. In anticipation of submission for regulatory approvals, the transgenic events contained in golden rice have also been thoroughly characterized to facilitate requirements for safety assessment.

Prof. Wayne Parrott from the University of Georgia, USA, shared his views on the overall evolution and development of plant breeding to improve food crops through his presentation on **Plant Improvement – Perspectives on Conventional and Genetic Engineering Techniques**. Prof. Parrott explained that throughout history, plant breeders have continuously sought to improve plants used for food in order to obtain higher crops yields and to confer resistance against adverse growing conditions.

The earliest efforts in plant breeding include the domestication of wild food plants, which have been achieved through the process of selection for desired traits over time. In modern times, plant breeders continue to use this conventional breeding approach of selection to develop modern cultivars that contain desirable traits and often stack or combine these genetic traits to obtain the desired properties. The source of genes that are used for selection often come from wild relatives of domesticated species.

During conventional breeding, undesirable traits are often also incorporated into the resulting plant and need to be eliminated through several cycles of breeding to obtain the final desired product. More recently, it has also been discovered that the conventional breeding process also results in the accumulation of new genes in plants, rather than just the replacement of one form of a gene (allele) with another as previously thought.

Apart from using genes found in wild relatives, plant breeders have also

adopted the use of radiation to obtain new gene mutations in plants that could provide useful traits that could be selected. However, the final product of such plants obtained through mutational breeding often also incorporates gene mutations caused by exposure to radiation that are not always well characterized.

Additionally, plant breeders have been successful in transferring genes from non-sexually compatible species through the crossing with an intermediate species. This process does, however, result in the unintended transfer of large segments of DNA apart from the desired gene into the final product, which is a phenomenon known as 'linkage drag'.

Finally, the development of genetic engineering techniques using transgenic technology has provided plant breeders with a more accurate means to transfer desired genes into the final product and it also provides the possibility to transfer genes from any source.

When compared with plants bred using conventional breeding and mutation breeding, it has been shown that genetically engineered plants have far less genetic variability, which would mean that they would also have a lower likelihood to produce unintended effects. Hence, stacking of traits from genetically engineered plants would also not likely to cause greater chances for unintended effect as stacking of traits from conventionally bred plants.

Key Conclusions

- Southeast Asia faces challenges such as increasing urbanization, rising demand for wider diversity of foods, climate change and environmental degradation. These challenges pose a threat to food and nutrition security in the region.
- Both conventional plant breeding techniques and genetic engineering techniques have the potential to improve crop yields and enhance the nutritional value of food crops.
- Advances in genetic engineering techniques allow for more accurate transfer of desired genes, thereby reducing genetic variability in the final product. This also reduces the likelihood of producing unintended effects.

ILSI Annual Meeting 2016: A Report

The ILSI Annual Meeting is an important, yearly gathering for Members, Board Directors, Scientific Advisors and Staff of all ILSI branches and entities to meet and exchange updates. It is also a good opportunity for ILSI's valuable stakeholders to build closer ties and foster strong relationships. The 2016 ILSI Annual Meeting was held in St. Petersburg, Florida, U.S. from January 21 - 27, and was well-attended by representatives from all ILSI branches and entities.

ILSI SEA Region participated actively in this year's Annual Meeting, with a team led by Executive Director Mrs. Boon Yee Yeong, and including Ms. Pauline Chan, Director of Scientific Programs, Dr. Sofia Amarra, Director of Research (Nutrition) and Deputy Director of Scientific Programs, Mr. Keng Ngee Teoh, Senior Manager of Scientific Programs and Ms. Jocelyn Wong, Assistant Manager of Scientific Programs.

Meetings attended by the ILSI SEA Region team included the first Worldwide ILSI Staff Networking Event, ILSI Branch Staff Meeting, ILSI Asian Branches Meeting, ILSI Assembly of Members, ILSI Branch Leadership Meeting, as well as Scientific Sessions organized by ILSI, ILSI Europe and ILSI North America.

Scientific Sessions

The Scientific Program at the Annual Meeting 2016 provided an update on the latest research on a diverse range of food safety and nutrition topics. Presentations by scientific experts from leading academic research institutions, government agencies and industrial organizations allowed for productive exchange of knowledge and open discussion on critical issues.

Presentations made by speakers at the Scientific Sessions can be found on www.ilsi.org or at ILSI Global YouTube Account at <https://www.youtube.com/user/ILSIGlobal>

ILSI SEA Region Branch Meeting

The ILSI SEA Region Branch Meeting is held annually at the ILSI Annual Meeting as an opportunity for the branch to share updates on its activities as well as its accomplishments over the past year with invited guests that include advisors, representatives from member companies, colleagues from other ILSI branches

and entities, as well as friends and associates interested to learn more about ILSI SEA Region.

At this year's meeting, the branch presented its new Science Clusters structure which was implemented in 2016 following a review by its Science Strategies Working Group. The reorganization of the Science Clusters was needed to address changing and new emerging issues in public health, nutrition, food safety and sustainable agriculture. It would also allow the branch to better align its scientific programs and activities with the One ILSI thematic areas initiated by ILSI Global.

The branch also presented its activities and accomplishments in 2015, which included scientific meetings at regional and country-level; publication of scientific papers and reports in scientific journals and book chapters; research studies and collaborative projects. Besides the overview of its activities, the branch also provided more information on key on-going research projects, such as the One ILSI Project on Nutrition, Health and Wellbeing: Multi-Country Survey - Profiling the Elderly and Review on Healthy Ageing. The branch also showcased its involvement and support contributed to the ASEAN food safety initiatives, particularly in facilitating the implementation of science-based risk analysis across ASEAN.

Fostering Closer Collaboration among ILSI's Asian Branches

ILSI SEA Region reprised its role in coordinating and fostering collaboration among ILSI's Asian branches, comprising ILSI Focal Point in China, ILSI India, ILSI



ILSI SEA Region staff at the ILSI Annual Meeting 2016: (L to R) Mr. Keng Ngee Teoh, Dr. Sofia Amarra, Ms. Pauline Chan, Ms. Jocelyn Wong and Mrs. Boon Yee Yeong

Japan, ILSI Korea, ILSI SEA Region and ILSI Taiwan. One of the key objectives of the annual ILSI Asian Branches Meeting is for the Asian branches to explore and discuss areas of common interest and collaboration.

At this year's meeting, each of the ILSI Asian branches provided a brief update of their respective activities and outputs achieved in 2015. Scientific activities jointly organized by the Asian branches over the past year were also highlighted, which included the 12th Asian Congress of Nutrition (ACN) held in Japan; the series of annual BeSeTo Meetings on food and nutrition safety jointly organized by ILSI Focal Point in China, ILSI Japan and ILSI Korea; as well as the on-going project on "Investigation of Food Regulations" led by ILSI Japan /MAFF (Japan Ministry of Agriculture, Forestry and Fisheries).

The Asian Branches also discussed upcoming and proposed collaborations such as the 8th BeSeTo Meeting that will be held in China; the 4th Asia-Pacific International Conference on Food Safety & 7th Asian Conference on Food and Nutrition Safety to be held in Malaysia; as well as the project on "A Comparative Study on Nutrition Labelling and Health Claims Regulations in Asian Countries 2016". In addition, the Asian Branches also shared updates on emerging issues in Asia which include food and nutrition security, food safety, biotechnology, risk analysis, sustainable agriculture, as well as aging.

Outstanding ILSI Staff Award for ILSI SEA Region's Staff

Dr. Sofia Amarra, together with Dr. Junshi Chen from ILSI Focal Point in China, were awarded the Outstanding ILSI Staff Award. Since joining ILSI SEA Region in 2011, Dr. Amarra has driven many collaborative projects and research especially in the areas of maternal, infant and young child nutrition, and dietary intakes. She has also published many papers in peer-reviewed and open access journals. Her tenacity, passion and diligence in research has placed ILSI SEA Region in the forefront of many key areas in ASEAN. ILSI SEA Region is proud that she has received this award. Congratulations, Dr. Amarra!



Dr. Suzie Harris, Dr. Junshi Chen, Dr. Peter Van Bladeren and Dr. Sofia Amarra

Malaspina International Scholar Travel Award

ILSI has established the Malaspina International Scholar Travel Award and the first batch of recipients received their awards at the 2015 ILSI Annual Meeting. The award is named after Dr. Alex Malaspina, the founder and first President of ILSI. The award is designed to enable academic scientists who are at an early stage in their careers to participate in the scientific discussions during the ILSI Annual Meeting. Candidates from the various regions in which ILSI has a presence have been selected to receive the Malaspina International Scholar Travel Award.

For 2016, Dr. Hamid Jan B. Jan Mohamed, Associate Professor of the Nutrition Program, School of Health Sciences, Universiti Sains Malaysia, was nominated by ILSI SEA Region and had successfully been selected by the Malaspina International Scholar Travel Awardees & Selection Committee to receive the award.



Dr. Alex Malaspina and Dr. Hamid Jan B. Jan Mohamed

Some Words from Dr. Hamid Jan B. Jan Mohamed

I am very thankful to ILSI for selecting me as one of the 12 recipients of the 2016 ILSI Malaspina International Scholar Travel Award. The award was presented during the 2016 ILSI Annual Meeting in Tampa, U.S.A, in January 2016 whereby the plaque was presented by Dr. Suzanne Harris, Executive Director of ILSI during the plenary opening ceremony.

A special session was allocated for the Malaspina awardees to present their research work and future research plan to the ILSI Board of Trustees and all ILSI Branch members. I took the opportunity to share my research findings on the Universiti Sains Malaysia Monsoon Study which was aimed at investigating Vitamin D status in relation to season, occupation and sunlight exposure. I also briefly presented my achievements and plans for the first pregnancy cohort study in Malaysia which is named as the Universiti Sains Malaysia Pregnancy Cohort Study. I am happy that I received a lot of interests from the other awardees and audiences after the presentation. I am hopeful that the presentation would open up more opportunities for me to collaborate with other experts.

A casual dinner for the Malaspina awardees was also hosted by the Coca-Cola Company which was attended by the awardee's mentors, selection committee members, regional managers and Dr. Wamwari Waichungo, the Vice President of Coca

Cola. At the dinner, Dr. Alex Malaspina presented an award certificate to each of the awardees. I had more opportunities at this wonderful event to chat with Dr. Malaspina personally. I like his idea on the tripartite model that is advocated through ILSI by engaging scientists from academia, government and industry to ensure human and environmental health and safety.

This award provided me with the opportunity to meet experts in nutrition from academia, government and industry from around the globe. It has given me a great platform to expand my network, to learn from them and also to share my research findings through informal and formal events.

The 2016 ILSI Annual Meeting was a world-class forum for scientific discussion on current issues in nutrition, food safety, food security and public health. I deeply appreciate ILSI for organizing the event in such a way that all Malaspina awardees were exposed to various levels of scientific discussion and networking, to ILSI SEA Region for my nomination, to The Coca-Cola Company for hosting the award dinner, and to Mr. Geoffry Smith as my mentor for his untiring guidance from start till now.

Dr. Hamid Jan B. Jan Mohamed
March 2016

Innovations and Partnerships to Promote Healthier Diets

ILSI SEA Region Thailand Country Committee and the Food Science and Technology Association of Thailand (FoSTAT) co-organized a seminar entitled “Food Innovation/Renovation for Promoting Healthy Diets” on October 30, 2015 in Bangkok, Thailand. The 1-day seminar provided an insight on the rationale and the use of food innovation and renovation techniques to promote healthy diets. It also provided an understanding of the science behind the use of these techniques in the reduction of macronutrients content in food products and discussed the issues and challenges faced. The seminar was attended by relevant professionals from government departments and agencies, academia, research organizations and food industries.

The invited speakers were experts in the area from the relevant academia, government agencies and industry. The opening presentation by Dr. Visith Chavasit from the Institute of Nutrition, Mahidol University (INMU), Thailand, provided background **information on the current non-communicable disease status in Thailand and other Southeast Asian countries**. He also elaborated on the efforts and intervention programs in promoting healthy diets, including the use of nutrition facts panel and front-of-package nutrition labels. He finished the presentation by introducing the Thai Healthier Symbol scheme which is being developed.

Next, Dr. Eunice Pang from the Health Promotion Board, Singapore shared the experience in using a **holistic approach to promoting healthy eating and healthier food products**. She emphasized the importance of collaborative partnerships among various stakeholders for increasing the pervasiveness of healthier meals, creating a business case for providing healthier products, as well as educating and encouraging consumers to make better choices.

The following session on the science behind innovation and renovation was presented by representatives from the food industry, Dr. Danielle Greenberg from PepsiCo Inc., USA, and Dr. Vera Matz from Unilever, Thailand. They talked about **technological implications and considerations in reformulating products to facilitate the promotion of healthy diets particularly reduction of sugar and sodium**. Challenges that may require breakthrough solutions in the future were also discussed.

Dr. Keri McCrickerd from the Clinical Nutrition Research Center in Singapore presented an **innovative approach to reduce energy intake and maintain satiety through enhanced sensory**



properties of food. Her presentation covered the opportunity for the use of sensory cues based on food's sight, smell, taste and texture, not only to mask energy reduction in foods but also to influence eating behaviors in other ways to reduce energy intake.

Dr. Chanida Pachotikarn from the INMU, Thailand, provided her view on **consumer education for healthy food choices**. She focused on the importance of total diet or overall pattern of food eaten as an essential component of a healthy eating style. She also suggested that well-designed nutrition education programs including the use of appropriate tools and techniques could lead to healthier food choices by the consumers. The last presentation by Ms. Inna Guzik from the

Nielsen Company, Thailand, provided an **update into the Asia Pacific healthy eating trends**. She remarked that consumers nowadays would look for products that are both good for them and good for society. A product health and wellness benefit would be influential purchase decision drivers.

A panel discussion was organized as the final session of the seminar with invited key stakeholders from academia, government, professional body and industry. The panel shared their viewpoint and effort in promoting healthy diets. They all agreed on the importance and necessity of working in partnership and means in which each stakeholder could assist in health promotion.

Key Conclusions

- To address the problem of non-communicable diseases, effective nutrition interventions are needed to promote healthier diets among the population. These interventions include the reformulation of food products, nutrition labeling on product packaging, and consumer education.
- Increasingly, consumers are looking for products that benefit both health and society.
- A holistic approach that encourages collaborative partnerships among various stakeholders is crucial for successful health promotion.

The Philippines Introduces New Dietary Reference Intakes

Recently, the Food and Nutrition Research Institute (FNRI) of the Department of Science and Technology, Philippines, led the formulation of the 2015 Philippine Dietary Reference Intakes (DRIs) by an expert committee from various institutions to seek the revision of the 2002 Recommended Energy and Nutrient Intake (RENI). The Philippine DRIs were conceived as a set of guidelines for Filipinos for the daily intake of energy and nutrients and other food components (such as fiber) in terms of Estimated Average Requirement (EAR), Recommended Energy and Nutrient Intake (REI/RNI), Adequate Intake (AI) and Tolerable Upper Intake Level (UL).

The ILSI SEA Region Philippines Country Committee organized a seminar in collaboration with the FNRI and the Philippine Chamber of Food Manufacturers, Inc., to disseminate the 2015 Philippine DRI (2015 PDRI) to stakeholders from government, industry and academia, with the objective of promoting the understanding of the



Speakers, Guests and ILSI SEA Region Philippines Country Committee

concepts, principles and basis for the revision and its application in policy and program formulation. The Seminar was held on December 3, 2015 in Manila, Philippines, and was attended by 140 stakeholders from various disciplines.

The first speaker was Dr. Rosario S. Sagum, the Chairperson of the FNRI 2015 PDRI Technical Working Group, who discussed the **principles, concepts and processes that were followed in the formulation of the 2015 PDRI**. The new reference was formulated by an Expert Committee formed by FNRI together with a Technical Working Group from the Institute, and subjected to an External Review and Stakeholders Meeting. The new guide adopted the multi-level approach for setting nutrient intakes in order to meet the needs of various users for appropriate nutrient reference values such as for planning and assessing diets, for setting food production targets, and drawing up food and nutrition policies.

The formulation of the 2015 PDRI took into account the new developments in nutrition science and recommendations

including the recent WHO/FAO and IOM guidelines which were used as reference and when local data were unavailable; the 2006 WHO Child Growth Standards; the results of the recent National Nutrition Surveys of FNRI; as well as the trends in nutrition-related diseases particularly NCDs. The end points of the new recommendations are to satisfy the needs of nearly all apparently healthy Filipinos not only to prevent nutrient deficiency and for some the prevention of chronic disease, but also to avoid excess.

Dr. Maria Regina Pedro, a member of the DRI Expert Committee, compared the **important elements of the 2015 PDRI against the 2002 Philippine RENI**. Dr. Pedro began by first listing the references by nutrient from the scientific literature including local data on Filipino subjects that were used for the formulation of the reference intakes.

Dr. Pedro discussed in some detail, the bases for the review of the 2002 RENI; firstly, the availability of new methods in estimating nutrient requirement. Secondly, the adoption of the updated

child growth standards/growth reference from WHO and the WHO/NCHS, and the adult weight and height data from the 2008 National Nutrition Survey of FNRI – and indeed, many of the differences in the recommendations arose from the increase in the reference weights of Filipinos. Thirdly, new scientific evidence useful in estimating nutrient requirements such as data on storage efficiency of vitamin A and bioavailability of iron from foods, the new evidence on human milk volume and on nutrient requirements particularly of energy, protein, vitamins A and E, iron and iodine, and others; and fourthly, the need to align with recent universal goals such as infant and young child feeding, the prevention of obesity and NCDs, recent expert recommendations on sugar, fatty acids, dietary fiber and others.

Dr. Pedro concluded that providing the various components of DRI would be useful in meeting the need of various stakeholders and giving clarity on appropriate NRVs for different uses. For example, for nutritional assessment for groups and individuals and for planning food fortification programs, the use of

EAR or AI (when EAR is not available) may be appropriate. In dietary planning for individuals and groups where the goal is to ensure that the probability of inadequacy is low, the REI/RNI may be the appropriate DRI.

Mr. Carl Vincent Cabanilla, a member of the FNRI Technical Working Group on DRI, discussed the **uses and applications of the various components of the PDRI**, namely, EAR, REI/RNI, AI and UL. After presenting a conceptual framework in arriving at the uses of dietary standards, he summarized the major uses and applications of EAR, REI/RNI, AI and UL.

For dietary assessment of individuals and groups, the EAR, AI and UL may be useful. For dietary planning, REI/RNI, AI and UL may be useful in the dietary assessment of individuals, while EAR, REI and UL may be used in dietary assessment of groups of individuals. Mr. Cabanilla then gave sample applications of the PDRI.

Ms. Maria Lourdes A. Vega, Chief, Nutrition Policy and Planning Division of the Philippine National Nutrition Council, discussed the implications of the 2015 PDRI to **food and nutrition policies and programs**. Ms. Vega agreed to the relevance of the revision of 2002 dietary standard in the light of the double burden of malnutrition and the new regulations on mandatory food fortification, among others. She pointed to important challenges facing the use of the new PDRI, such as the challenge of educating users in determining which of the components of the PDRI to use for which purpose; the need to recast past nutrition situation reports for comparability; the need to report on other dietary concerns such as population sugar intake, sodium, and potassium intake, and distribution of energy intake by macronutrient.

The **application of the 2015 PDRI to nutrition label regulations in the Philippines** was discussed by Ms. Christian Grace B. Estimada, Food and Drug Regulation Officer, Center for Food Regulation and Research, Philippine Food and Drugs Administration. After summarizing the revised rules and regulations of FDA governing the labeling of pre-packaged food products, Ms. Estimada pointed to some relevant regulations in the revised rules that will have to be attended to with the adoption of the 2015 PDRI. For example, the statement, "Based on the 2015 PDRI REI/RNI" will need to be put under the Nutrition Information table instead of "Based on 2002 RENI".

Finally, the **implications of the 2015 PDRI to the food industry** was discussed by Ms. Elizabeth M. De Leon-Lim,



Director of the Philippine Chamber of Food Manufacturers, Inc. The new labeling guidelines included additional requirements including storage condition, expiry/use-by-date/consume before, food allergen information. The nutrition facts table is now mandatory, and its footnote will need to be changed to "Based on 2015 DRI RENI for...". Moreover, the new regulation allows voluntary Front-of-Pack labeling in the form of a cylindrical format containing the energy or caloric content of the pre-processed food product per serving and the percentage of the caloric value based on the revised RENI for energy.

The Secretary of Health has approved the Chamber's request to extend the exhaustion of existing labels until the end of 2016. In addition, Ms. De Leon pointed out some challenges of the 2015 PDRI to the food industry, for example putting nutrition information in small packages; how the 2015 PDRI could be a non-barrier to trade; the need to clarify RENI declaration for other nutrients such as sodium; and whether FDA will allow another extension of the new labeling implementation.

The open forum that followed centered on the new regulation of the FDA and how the challenges to the food industry could be met especially in pre-packaged food labeling. Questions were also raised on the basis for the protein requirement for infants, for example; some nutrients and food components that are not included in the 2015 PDRI; the use of the different components of the DRI, and the meaning of "requirement" as against "allowance". However, the most thorny issues discussed

were on the way the PDRI would be applied for different uses, including agriculture planning, definition of hunger index and poverty level, assessment of the level of nutritional adequacy of individuals and populations, and its practical application to the ordinary consumer.

Key Conclusions

- The 2015 Philippines Dietary Reference Intakes (2015 PDRIs) adopt a multi-level approach to helping different stakeholders achieve their respective nutritional goals.
- The 2015 PDRIs were developed by taking into account new scientific evidences (both local and foreign); recent authoritative standards, as well as the changing dietary and disease patterns including the increasing prevalence of NCDs.
- Current food and nutrition policies and programs including food labeling regulations, will need to consider the changes due to introduction of the 2015 PDRIs.
- For the 2015 PDRIs to be effectively applied by different stakeholders, much will depend on the objectives of the stakeholders. Stakeholders will need to be educated on which tools within the 2015 PDRIs may be applied for different purposes, and ultimately to achieve the overall goal of optimum nutritional health of the population.

Food Composition Database in ASEAN

On December 17-18, 2015, ILSI SEA Region co-organized a Roundtable Discussion on Food Composition Database (FCDB) with the Institute of Nutrition, Mahidol University (INMU), Thailand. INMU coordinates the activities of the Association of Southeast Asian Network of Food Data Systems (ASEANFOODS), which was established by the ASEAN member countries.

The objectives of the Roundtable Discussion were to develop a draft system for quality evaluation of published food composition tables (FCTs) and FCDBs in the region, and to use the system to evaluate the quality of current FCTs and FCDBs. Regulators and experts from Thailand, Malaysia, Indonesia, Philippines, and Vietnam participated in the meeting.



During the meeting, the draft food composition data (FCD) quality evaluation system with twelve criteria for evaluation was developed and agreed upon. The group has also selected eight out of twelve of the developed criteria and applied them for evaluation of the available national FCTs in ASEAN. Based on the evaluation, challenges and issues within each country and across the countries which participated were identified.

When asked to prioritize the most challenging issue regarding the quality of FCT data in the region, there was a general consensus that the nutrients covered in the FCTs was a major limitation. Given current health problems and issues in the region, priority nutrients

that need to be included for analysis are fatty acids (saturated, polyunsaturated, monounsaturated) and total sugars. Other nutrients are also important for analysis of foods in the region. It was agreed that this will be done in stages, following the analysis of the priority nutrients.

In addition, Assoc. Prof. Dr. Kunchit Judprasong, the present Vice-Coordinator of ASEANFOODS from Thailand, was nominated to be the new ASEANFOODS Coordinator together with Mr. Le Hong Dung from Vietnam who was nominated to be the Vice-Coordinator. Senior advisors to ASEANFOODS are Dr. Prapasri Puwastien from Thailand, and Dr. E-Siong Tee from Malaysia. The official designation of these positions will

take place during a follow up workshop in March 2016. The group agreed to plan the development of good quality food composition data on a long-term basis including a series of workshops and activities to develop the ASEAN FCDB. There was also a proposal to conduct a training workshop on FCD development especially for the young generation. The next workshop will include plans for the analysis of the priority nutrients for each ASEAN country.

It is also expected that the methods of analysis, expected outcomes and funds needed to achieve these outcomes, as well as a road map to define the role of public-private partnerships in helping the region achieve a better quality FCD will be discussed.

Upcoming Activity Highlights

Meetings

Symposium

Dietary Intakes: Assessing What We Eat, Evaluating Methodologies

April 26, 2016, Singapore

Data on food consumption and nutrient intake are determined using dietary assessment and biochemical methods. To better assess the nutritional value of the food consumed by individuals and populations, food consumption data needs to be up-to-date, accurate and reliable. Good quality food consumption data can provide insights as to what a population is consuming, as well as changes to its food supply. This half-day symposium will discuss current development and process for improving and expanding the Food Composition Databases in SE Asia Region, and share experiences, development and international best practice in dietary assessment methodologies. It will also provide updates on the latest findings from food consumption survey data in selected SE Asia countries and discuss gaps, barriers and opportunities in the collection, analysis and interpretation of food consumption survey data in SE Asia.

Seminar

On the Pulse: The Latest Evidence of Health Benefits, Innovations and Intake Recommendations for Pulses

May 2, 2016, Adelaide, South Australia

Pulses, including beans, peas, lentils and lupins, have been recognised for centuries as a cornerstone of a healthy diet in many cultures. However, research is only starting to unlock the mechanisms to explain their role in a range of conditions, from gut health to cognitive decline. This one-day symposium is organized by the Grains & Legumes Nutrition Council and partnered by ILSI SEA Region Australia Country Committee, CSIRO and Australia Institute of Food Science and Technology. At the symposium, leading researchers will examine the latest research on the health effects of pulses and highlight research gaps, introduce intriguing new innovations being used to incorporate pulses in to the diet and identify opportunities for future work. They will also discuss the disparity between current intakes and recent global consensus on recommended intakes.

Mini-Symposium

"The New Frontier: Diet, Microbiome and Health"

May 26, 2016, Singapore

Interaction among the diet, our gut microbiome, and health, such as bone health, is a new frontier. There is a rapidly expanding body of research around bone health and gut microbiome. Prebiotics have influence in enhancing bone properties through shifts in gut microbiota, which offers a strategy to improving calcium nutrition and bone health. Bone health is a rising issue in Asia, where building peak bone mass in youth and retaining it with advancing age is a key strategy to reducing risk of osteoporosis. This 2.5-hour mini symposium will comprise of 3 scientific presentations from professors specializing in these areas. Presentations will cover the effects of gut microbiota on skeletal health, the Asian gut microbiota, and the relationship between microbiome and aging.

Conference

4th Asia-Pacific International Conference on Food Safety & 7th Asian Conference on Food and Nutrition Safety

October 11-13, 2016, Penang, Malaysia

Food safety remains a key priority within the newly established ASEAN Community – both in relation to ensuring the health and wellbeing of ASEAN citizens, as well as in facilitating food trade within the region. Recognizing the need to raise awareness on the importance of food safety among the food industry, academic researchers and government authorities within the region, ILSI SEA Region and the Southeast Asia Association for Food Protection (SEA AFP) will jointly organize the 4th Asia-Pacific International Food Safety Conference & 7th Asian Conference on Food and Nutrition Safety on October 11- 13, 2016, in Penang, Malaysia. The theme of the conferences – ‘Advancing Food Safety in the ASEAN Community’, emphasizes the need for ASEAN to further develop its food safety capability by harnessing knowledge from across the Asia-Pacific region, improving the scientific understanding of various food safety issues, as well as adopting new food safety technologies and innovations. Exciting new advances and issues relevant to food safety, such as whole genome sequencing and foodborne viruses, will be discussed at the conference.

On-going Research and Collaborative Projects

Nationally-representative Survey of Thiamine Deficiency in Cambodia for Infants and Pregnant Women

Anemia is considered as a serious public health problem in Cambodia, with 47% of the women of reproductive age (WRA) being anemic and more than 50% of the children between 6 and 59 months being anemic in 2010. ILSI SEA Region supported and collaborated with Cambodia's Ministry of Agriculture Forestry and Fisheries, Fisheries Administration, and Department of Fisheries Post-Harvest Technologies and Quality Control, on the research project to establish nationally representative data on the prevalence of anemia and deficiency of several important micronutrients in WRA and children less than 5 yrs of age such as iron, Vitamin A, iodine, zinc, Vitamin D, and to obtain data on body composition which is important to establish risk patterns for chronic diseases, both current and later in life.

Study on Dietary Exposure of Sweeteners in Thai Consumers

The understanding of dietary exposure to food additives among consumers is an important step in the development of science-based food regulations and standards. Recognizing the need for improved understanding of dietary exposure to non-caloric sweeteners within the region, ILSI SEA is supporting a study led by researchers at the Institute of Nutrition, Mahidol University, Thailand, to understand the consumption of non-caloric sweeteners among Thai consumers. A refined dietary exposure estimate for Thai consumers would also be developed to support risk management decision making, as well as for comparison of exposures to similar non-caloric sweeteners between other countries and regions.

ILSI SEA Region Calendar of Activities 2016/2017

Meetings

Food and Nutrients in Health and Disease Science Cluster

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| Symposium on Dietary Intakes: Assessing What We Eat & Evaluating Methodologies (In conjunction with ILSI SEA Region Annual Meeting 2016) | April 26, 2016 Singapore |
| Mini-Symposium on The New Frontier: Diet, Microbiome and Health | May 26, 2016 Singapore |
| Seminar on Diabetes and Metabolic Syndromes | 1st Quarter 2017 Singapore |

Technical Committee on Maternal, Infant and Young Child Nutrition

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| Seminar and 5th Expert Consultation on Maternal, Infant and Young Child Nutrition | July/Aug 2016 Cambodia |
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Nutrition and Food Guidance for Public Health Science Cluster

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| ASEANFOODS – ILSI SEA Region Workshop on Food Composition Database (By Invitation) | March 30-31, 2016 Bangkok, Thailand |
| Symposium on Dietary Intakes: Assessing What We Eat & Evaluating Methodologies (In conjunction with ILSI SEA Region Annual Meeting 2016) | April 26, 2016 Singapore |
| Workshop on Dietary Intakes: Assessing What We Eat & Evaluating Methodologies (By Invitation) | April 27, 2016 Singapore |
| On the Pulse: The Latest Evidence of Health Benefits, Innovations and Intake Recommendations for Pulses | May 2, 2016 Adelaide, South Australia |
| Workshop on Nutrition Labeling and Claims (By Invitation) | May 4-5, 2016 Hanoi, Vietnam |
| 2nd Workshop on ASEAN Food Composition Database (By Invitation) | 3rd-4th Quarter 2016 TBC |

Food Safety and Risk Assessment Science Cluster

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| Workshop on Food Safety Risk Profiling in ASEAN (By Invitation) | March 7-8, 2016 Jakarta, Indonesia |
| 12th ASEAN Food Safety Standards Harmonization Workshop (By Invitation) | Aug 2016 (TBC) Kuala Lumpur, Malaysia |
| 4th Asia-Pacific International Conference on Food Safety & 7th Asian Conference on Food and Nutrition Safety | October 11-13, 2016 Penang, Malaysia |

Sustainable Food Systems Science Cluster

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| Workshop on Food Security and Urbanisation in South East Asia (By Invitation) | May 9-10, 2016 Singapore |
| Seminar on Sustainable Food Production and System in Southeast Asia | 3rd Quarter 2016 TBC |

Others

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| ILSI Annual Meeting 2016 | January 22-27, 2016 St. Petersburg, Florida, USA |
| ILSI Southeast Asia Region Annual Meeting 2016 | April 25-26, 2016 Singapore |
| Participation at the <i>Open Session of the 1st Meeting of the Cluster 4: Ensuring Food Safety for the ASEAN Post-2015 Health Development Agenda</i> | April 26-28, 2016 Vientiane, Lao PDR |

Research, Meeting Reports, and Collaborative Projects

Food and Nutrients in Health and Disease Science Cluster

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| Systematic Review on Salt Sensitivity: Is there a Genetic Pre-disposition that Predicts Cardiovascular Disease Risk? <i>In collaboration with CSIRO, Australia</i> | Draft report completed; Decision on further analysis pending |
| 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 data analysis |

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| Scoping Review on Sugar Intake in Southeast Asia: Levels of Consumption and Major Sources in the Diet | Malaysia: Published; Indonesia: Publication submitted – In review; Others: On-going |
| 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 |
| Nationally-representative Survey of Thiamine Deficiency in Cambodia for Infants and Pregnant Women <i>In collaboration with UNICEF Cambodia and MAFF, Cambodia</i> | Completed; Publication under preparation |
| ILSI SEA Region Conference Proceedings: The Gut, its Microbes and Health - New Knowledge and Applications for Asia | Draft for publication completed; undergoing review by other authors |
| Technical Committee on Maternal, Infant and Young Child Nutrition | |
| Compliance with WHO IYCF Indicators and Dietary Adequacy in 6-23 Months of Age: A Cross-Sectional Study in Malaysia <i>In collaboration with International Medical University (IMU), Malaysia</i> | Completed; Publication submitted – In review |
| Vitamin D Status and its Correlates among Pregnant Thai Adolescents <i>In collaboration with Mahidol University, Thailand</i> | Planned for 2016-2017 |
| Nutrition and Food Guidance for Public Health Science Cluster | |
| Risks and Benefits of Intense Sweeteners: A Survey for Food Experts and Opinion Leaders <i>In collaboration with Newcastle University, UK and Universiti Kebangsaan Malaysia</i> | Completed; Publication under preparation |
| Status Review and Evaluation of Existing Food Composition Database in ASEAN | Completed; Monograph under preparation |
| Review of the Status of Food Consumption Surveys Among Southeast Asian Countries | Completed; Monograph under preparation |
| Understanding Consumer Perception and Attitudes Towards Sweeteners | Completed; Publication under preparation |
| Food Safety and Risk Assessment Science Cluster | |
| Study on Dietary Exposure of Sweeteners in Thai Consumers <i>In collaboration with Institute of Nutrition, Mahidol University, Thailand</i> | On-going |
| ASEAN Food Safety Standards Database <i>In collaboration with ACCSQ PFPWG</i> | On-going |
| Special Projects and Others | |
| Investigation of Commodity Food Standards and Methods of Analysis in East Asia <i>In collaboration with ILSI Japan-MAFF, ILSI Focal Point China, ILSI Korea, ILSI India and ILSI Taiwan</i> | On-going |
| Prevalence of Hemoglobinopathy among Anemic Individuals in Metro Manila: Data from the National Nutrition Survey <i>In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines</i> | Phase 1 completed; Publication under preparation |
| ILSI SEA Region Contribution to the One ILSI Project on Nutrition, Health and Wellbeing: Multi-Country Survey - Profiling the Elderly and Review on Healthy Ageing <i>Thailand: in collaboration with Mahidol University</i> <i>Philippines: in collaboration with University of San Carlos</i> <i>Malaysia: in collaboration with Universiti Kebangsaan Malaysia</i> | On-going |

Publications

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| Intake of Added Sugar in Malaysia: A Review | Published in <i>Asia Pacific Journal of Clinical Nutrition</i> , 2016, 25(2). doi: 10.6133/apjcn.2016.25.2.13 |
| Sodium Consumption in Southeast Asia: an Updated Review of Intake Levels and Dietary Sources in Six Countries | Published Book Chapter in <i>Preventive Nutrition (5th Ed)</i> , 2016, 765-792. |
| Functional Food Monograph | On-going |
| Symposium Proceedings: Sugar and Sweeteners (Singapore Meeting) | Planned for 2016 |

2016

4th Asia-Pacific International Food Safety Conference

7th Asian Conference on Food and Nutrition Safety

Advancing Food Safety in the ASEAN Community

*St. Giles Wembley,
Penang, Malaysia*
October 11 - 13, 2016



Organizers:



Co-Organizers:



The Asia-Pacific International Food Safety Conference is a regional conference series of the International Association for Food Protection (IAFP). It is held every two years, first in Korea (2009), followed by Australia (2011) and most recently in Taiwan (2013). The conference aims to serve as a platform to discuss the latest trends and issues in food safety across the Asia Pacific region, bringing together food safety professionals from all sectors including government, industry and academia.

The Asian Conference on Food and Nutrition Safety organized by the Southeast Asia Region branch of the International Life Sciences Institute (ILSI) is a well-recognized regional conference series first inaugurated in 1991 in Kuala Lumpur, Malaysia. It was the first major conference to discuss food safety in the Asian region. The conference is held once every 4 years in an Asian country, including Thailand (1994), China (2000), Indonesia (2004), Philippines (2008) and Singapore (2012). The conferences and concurrent training workshops bring together experts and stakeholders from industry, academia and government to address relevant scientific and technical issues impacting the safety of the food supply chain.

ILSI and IAFP have a long collaborative history and on the occasion of the inauguration of the newly-formed Southeast Asia Association of Food Protection (SEAAFP), the 2 organizations will jointly present their signature conference series in Penang, Malaysia in 2016.



We welcome your participation. Please look out for further details at www.tinyurl.com/SEAAFP-ILSI for more information.



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