Scientific Insight

News and Updates on Nutrition, Food Safety and Health

Food Safety in Asia

ASEAN Moves Ahead with Science-based Harmonization of Food Standards

Early Cognitive Development
Role of Nutrition and Assessment Methods for Asian Children

Nutrition Labels and Claims
Front-of-Pack Approach and Nutrition Profiling
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Vitamin D Deficiency in Australia
Should More Vitamin D be Allowed in the Food Supply

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From the Executive Director

As a regional branch with a strong focus on ASEAN, ILSI SEA Region marked a milestone in facilitating and hosting the 10th annual workshop for the ASEAN Food Safety Standards Harmonization Working Group, comprising key food safety regulators and scientists from Southeast Asian countries. This Working Group has covered much scientific ground in the past decade since its inception in 2001, and made significant strides towards its goals. ILSI SEA Region also facilitated a series of training workshops on ingredients safety in several ASEAN countries, helping to develop capability and scientific understanding.

This year’s Science Symposium held in conjunction with the branch’s Annual Meeting in April 2012, focused on the Role of Nutrition and Methods to Assess Early Cognitive Development of Asian Children. This follows the recent publication of a report on the branch’s 2010 Symposium on Nutrition and Cognition -Towards Research and Application for Different Life Stages in the Asia Pacific Journal of Clinical Nutrition. To address recent scientific developments and identified gaps on vitamin D knowledge, as well as concerns about the adequacy of vitamin D levels and intake in the population, ILSI SEA Region has organized a number of meetings on this emerging topic. The most recent meeting was held in June 2012 in Australia, and we will continue to collaborate with different partners on efforts to fill the knowledge gap. Another activity of significant interest and importance is our biennial seminar and workshop on Nutrition Labeling and Claims, covering regulatory development and sharing of best practices to guide consumers towards healthier food choices. A very successful seminar and workshop was held in August in Thailand.

We are also excited about the soon-to-be held 6th Asian Conference on Food and Nutrition Safety which will take place this November in Singapore. With an excellent scientific program and slate of eminent scientists, we envisage the conference will set the stage for scientific directions on the theme and topic areas covered in the conference over the next few years.

Finally, we look forward to your continue support for our scientific programs! We will share many more upcoming activities, especially our celebratory events to mark ILSI SEA Region’s 20th Anniversary in 2013.

Boon Yee Yeong
Executive Director
ILSI Southeast Asia Region

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ILSI Enhances Food Safety through Science-based Harmonization of Food Standards in Asia

Leading the Way Forward in ASEAN

Supporting the harmonization of food safety standards based on scientific evidence among the Member States of the Association of Southeast Asian Nations (ASEAN) is a key undertaking of ILSI SEA Region.

With the increasing globalization of the food supply chain, it is crucial for countries to incorporate the use of risk assessment to ensure food safety while at the same time facilitate regional as well as international trade.

ILSI SEA Region has provided training and disseminated scientific information, to help build capacity among ASEAN countries for the application of risk assessment principles within their national food control systems.

In 2001, ILSI SEA Region collaborated with FAO/WHO to establish the Working Group on ASEAN Food Safety Standards Harmonization to look into the issue of harmonizing food safety standards across the region. Through the Working Group’s series of on-going regional Workshops (now into its 10th Workshop), we are actively promoting scientific understanding and facilitating consensus on the application and implementation of risk analysis, exposure assessment and harmonization towards Codex Alimentarius standards whenever this is possible.

A key output of this work has been the development of the ASEAN Food Safety Standards Database, which is a first for the region. This on-line database is an important tool that facilitates the systematic review and monitoring of updates and harmonization progress among the ASEAN countries.

At the same time, since 2010, ILSI SEA Region has been working with FAO and the ASEAN Expert Group on Food Safety (AEGFS) on the “Project on Strengthening ASEAN Risk Assessment Capacities: Food Consumption Data”. This project aims to collect food consumption data that can be used for exposure assessment purposes into a common ASEAN database. At the 9th AEGFS meeting in Hanoi, Vietnam in October 2012, it was decided to establish an ASEAN Food Consumption Data Network to continue the work to develop the common ASEAN food consumption data for exposure assessment.

Supporting Collaboration Across Asia

In 2010, four ILSI branches in Asia – ILSI Japan, ILSI SEA Region, ILSI Focal Point in China and ILSI Korea, came together to initiate a project on the “Investigation of Commodity Food Standards and Analytical Methods in Asia”.

Funded by the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan, this research project aims to explore possibilities for harmonizing food standards and their respective analytical methods across key Asian countries.

Under this collaborative project, the first international conference was organized in Tokyo, Japan in March 2010. This was followed by the second conference in Bangkok, Thailand in March 2011, as well as the third conference in February 2012 in Jakarta, Indonesia.

This series of conferences provides a platform for the sharing of information on food standards in Asia, as well as to facilitate discussion on harmonization as well as other initiatives that can help to establish a sustainable food supply to guarantee food security and ensure food safety in the region.
Southeast Asia
Key Progress Made at 10th ASEAN Food Safety Standards Harmonization Workshop

ILSI SEA Region, in collaboration with the National Agency for Drug and Food Control (NADFC or BPOM) of Indonesia, organized the 10th ASEAN Food Safety Standards Harmonization Workshop on February 22-23, 2012 in Jakarta, Indonesia.

The Workshop is a continuation of the ongoing effort by ILSI SEA Region to facilitate harmonization of food safety standards among the 10 ASEAN (Association of Southeast Asian Nations) member countries.

This year’s meeting was attended by 31 participants comprising government officials from food regulatory agencies from 8 of the 10 ASEAN countries (Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Vietnam), academic scientific experts as well as representatives from the food industry.

Mrs. Boon Yee Yeong, Executive Director of ILSI SEA Region, provided the welcome remarks prior to the workshop proceedings. Dr. Roy Sparrinda, Deputy Chairman for Food Safety and Hazardous Substances at NADFC, served as the overall chairperson of the Working Group on ASEAN Food Standards Harmonization at the Workshop (the Working Group), while Prof. Dedi Fardiaz from Bogor Agricultural University served as co-chairperson.

Three key areas related to ongoing harmonization efforts were discussed at the Workshop, namely, the Harmonization of Food Additive Standards in ASEAN; Common Priorities among ASEAN Countries relating to Food Contaminants; and Common ASEAN Food Classification and Description for Contaminant Standards.

Harmonization of Food Additive Standards in ASEAN

Dr. Roy Sparrinda served as the chairperson for the session together with Prof. Dedi Fardiaz as the co-chairperson.

Mr. Keng Ngueh Teoh, Scientific Program Manager at ILSI SEA Region, provided a review of the objectives and work priorities for the Working Group on ASEAN Food Safety Standards Harmonization, highlighting some of the issues that are being addressed by ILSI Southeast Asia Region and the Working Group. These included:

1. Facilitate information exchange on existing food safety standards in ASEAN;
2. Prepare guidance on risk analysis for development of national food safety standards in ASEAN;
3. Identify research needs and implement training programs to facilitate exposure data generation and build risk assessment capacity in ASEAN; and
4. Facilitate harmonization efforts towards international standards.

Following this, representatives from each of the ASEAN member countries present at the Workshop shared regulatory updates on food additives and contaminants, as well as on other food safety issues that are impacting their countries.

After the country regulatory updates, Mr. Teoh shared the upgraded ASEAN Food Safety Standards Database with the Working Group. The new database includes a number of new features that are intended to support decision making in relation to harmonization of food additives standards with Codex GSFA.

Next Steps:
The Working Group members were generally supportive of using the database to facilitate the harmonization initiatives of the ASEAN Consultative Committee on Standards and Conformance (ACCSQ) Prepared Foodstuff Working Group (PFPWG). It was further suggested that a tracking system be incorporated to monitor changes that would be made to food additive standards by each country. At the end of the discussion, the Working Group requested ILSI SEA Region to present the database to the ACCSO PFPWG at their meeting in Yogyakarta in June 2012 for official endorsement and to finalize arrangements in relation to the database administration.

Organizers, Speakers and Faculty of the Workshop

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Common Priorities among ASEAN Countries relating to Food Contaminants

Dr. Roy Sparringa served as the chairperson for the session together with Prof. Dedi Fardiaz and Dr. Leon Gornis, Unilever, as the co-chairpersons.

ILSI SEA Region has conducted a Survey on ‘Regional Contaminant Concerns for ASEAN Countries’ to the Working Group (January, 2012). Key results from the Survey indicated that for chemical contaminants, the majority of ASEAN countries listed mycotoxins in agricultural products and heavy metals in seafood as being of greater concern; while for microbiological pathogens, Salmonella spp., E.coli, Vibrio spp., Listeria monocytogenes in fresh produce and seafood products were listed as high priorities. Among the main reasons stated by countries for selecting these chemical and microbiological contaminants as concerns are that they have significant impact on public health; they affect trade exports with third countries; as well as when alternative control measures can be addressed more urgently. In addition, Dr. Dewanti-Hariyadi also expressed the willingness of the International Commission on Microbiological Specifications for Food (ICMSF) Sub-Commission for South East Asia to support the food safety agenda among ASEAN countries in line with the Sub-Commission’s mission and objectives.

Dr. Peter Abbott from Biosearch Consulting, Australia, also provided a perspective on the Considerations that Influence the Setting of Contaminant Standards. Firstly, he pointed out that there are many different factors that can affect levels of contaminants in food, both naturally as well as through processing steps. These factors need to be considered when developing regulatory approaches. It was emphasized that standards alone are not the only method to manage contaminants in foods, as there are a number of different control options at various points of the production chain.

Setting of standards is only necessary when there is a high potential for human health risk at the anticipated levels of exposure (including for susceptible sub-populations); evidence of high frequency of ongoing contamination; when the food being regulated is important in the total diet; as well as when alternative control methods are ineffective or not fully effective. The use of guideline levels was also suggested in cases where the health risk is low but there is still some potential for contamination. Such levels could be used as a benchmarking tool in relation to ‘normal’ levels of contaminants in food, and could also act as a trigger for remedial action when necessary. The benefit of such a regulatory instrument is that they will not trigger automatic removal of food from the market in cases where this may not be necessary, and can further be used as a basis to ascertain the need for permanent standards in the future.

Next Steps:
In light of the information shared, the Working Group decided that the development “risk profile” documents would be useful to support further harmonization of control measures for contaminants in food, and requested ILSI SEA Region to help coordinate the development of these documents. The documents would be developed based on the identified groups of contaminants, such as for mycotoxins, heavy metals and microbiological pathogens. The document on microbiological pathogens would be jointly developed by ILSI SEA Region with the ICMSF Sub Commission for South East Asia.

Common ASEAN Food Classification and Description for Contaminant Standards

Prof. Dedi Fardiaz served as the chairperson for the session together with Dr. Frederic Aymes, Nestle Quality Assurance Center Singapore, as the co-chairperson.

The representatives from each of the ASEAN countries provided short presentations on the different food classification and description systems used in their countries.

After the country presentations, Dr. Ruby Apilado from the Food and Nutrition Research Institute, Philippines, shared the Challenges for Harmonizing Food Classification and Description Systems in ASEAN. Among some of the challenges identified are the ambiguities present in the food descriptions used across existing national systems, whereby some foods may have the same name but are in fact different types of foods, while others may be the same food but have different names. Some descriptors used in national systems may also be too generic and may not illustrate sub-varieties of a food (e.g. “melons”). Composite foods are also a challenge to incorporate into food classifications. At the regional level, differences between countries in terms of language, culture, as well as food commodities of economic importance also pose difficulties in developing a harmonized food classification and description system. Nevertheless, there are a number of benefits that can be gained from a common food classification and description across ASEAN, particularly for food safety applications. Countries should therefore be encouraged to work towards such harmonization.

Mr. Teoh suggested a Proposal for Harmonizing Food Classification and Description for ASEAN Food Contaminant Standards. One approach could be to adapt the European Food Safety Authority’s (EFSA) Food Classification and Description System for exposure assessment. This involves developing a “core list” of foods that are supplemented with additional descriptions through “facet descriptors”...
Harmonization of food safety standards is an important and positive progress. At the conclusion of this Workshop, there was consensus among the participants that important and positive progress has been made in the effort to advance harmonization of food safety standards among the ASEAN countries. ILSI SEA Region is following up on the outcomes from this meeting, and will be organizing the next meeting – the 11th ASEAN Food Safety Standards Harmonization Workshop which is being planned to be held in Lao PDR in the 3rd quarter of 2013.

Asia
Sharing of Information and Experiences among Asian Countries

On February 21, 2012, four ILSI Asian branches – ILSI Japan, ILSI SEA Region, ILSI Focal Point in China and ILSI Korea, jointly organized the ‘International Conference for Sharing Information on Food Standards in Asia’. The conference was attended by 130 international and local participants.

Mr. Yoshikazu Kojima from the Food Industry Affairs Bureau, Ministry of Agriculture, Forestry & Fisheries (MAFF), Japan, provided the opening remarks and was followed by Dr. Lucky Slamet, Head of the National Agency for Drug and Food Control (NADFC), Indonesia, who provided the welcoming remarks. Dr. Ryuji Yamaguchi, Executive Director of ILSI Japan, also gave a short introduction to the objectives of the conference.

This was followed by the keynote speech by Dr. Solomon Benigno, Senior Officer at the Agriculture Industries and Natural Resources Division of the ASEAN Secretariat. Dr. Solomon shared an overview of the framework and current initiatives for harmonization of food standards among ASEAN Member States, as well as some of the issues and challenges encountered during this ongoing process.

After the keynote speech, three speakers shared their perspectives on ASEAN food standards harmonization. Prof. Dedi Fardiaz from Bogor Agricultural University, Indonesia provided an overview of the existing regulatory frameworks for food standards in ASEAN countries; while Dr. Roy Sparringa, Deputy Chairman for Food Safety and Hazardous Substances at NADFC, shared the current progress of the ASEAN working groups undertaking the task of harmonizing food standards among ASEAN Member States, such as the ASEAN Consultative Committee on Standards and Quality Prepared Foodstuff Working Group (ACCSSQ FPFWG). Mr. Mazlan Isa from the Food Safety and Quality Division, Ministry of Health, also shared the current work within ASEAN to harmonize and compile food consumption data for exposure assessment purposes. He emphasized that ASEAN countries recognized the importance of adopting scientific risk assessment as the basis for setting food standards and as such, are now working together to build their mutual capabilities to conduct risk and exposure assessments.

Following the discussion on ASEAN harmonization, representatives from ILSI Focal Point in China (Dr. Li Yu), ILSI Japan (Mr. Hiroaki Hamano) and ILSI Korea (Prof. Jong Kyung Lee from Hanyang Women’s University, Korea) shared the overview of food additive regulations in China, Japan and Korea respectively.

Finally, current and emerging food safety issues in the ASEAN + 3 Region (which includes China, Japan and Korea) were presented in the last session for the day. Prof. Lynn Frewer from Newcastle University, UK, provided a presentation on risk perception and communication associated with food safety issues; while Dr. Kazushi Yamauchi from the Office of International Food Safety, Ministry of Health, Labour and Welfare, Japan, shared an overview of the food safety control system in Japan and also provided an update on the risk management activities conducted by Japanese authorities to ensure food safety following the Great East Japan Earthquake in the previous year.

This meeting was successful in sharing food safety knowledge and information on food standards in Asia. MAFF Japan has agreed to continue the current Project for another year, which will result in a follow-up meeting in 2013 in either India or Japan.
ILSI SEA Region Conducts Regional Training Workshops on Food Safety

As part of ILSI SEA Region’s on-going effort to increase scientific understanding and further develop capability within Southeast Asian countries, a series of Training Workshops on food safety principles and approaches were organized and conducted in February 2012. These Training Workshops were conducted in Indonesia, Philippines and Thailand.

Indonesia
Safety Assessment of Novel Ingredients

On February 20, 2012, ILSI SEA Region facilitated a half-day Training Workshop on Safety Assessment of Novel Ingredients for officers and expert committee members from the National Agency for Drug and Food Control (NADFC / BPOM), Indonesia at their office. Attended by 25 officers and expert committee members, the Training Workshop provided participants with an overview of safety assessment process required for the evaluation of novel ingredients.

The workshop was opened by Ms Tety Helfery Shombing, Subdirector of Food Standardization, NADFC, who explained the important of using science-based assessment process for the evaluation of novel ingredients.

Dr. Peter Abbott of Biosearch Consulting, Australia shared the principles and data requirement for safety assessment of novel ingredients. He indicated that the purpose of assessment is to confirm that the food/ingredient will not cause harm when used as intended. The assessment requires evidence that would depend on the following factors:

- Type of food or food ingredient
- Ingredient’s purity
- Particular safety concerns identified
- History of use of the food in other region and countries
- Proposed pattern of consumption

Dr. Abbott also shared the factors that may establish the food or ingredient as ‘novel’ such as known potential for adverse effects, its composition or structure, usage of new food production methods, new source of food ingredient and pattern and level of consumption. He emphasized that a food or ingredient that requires more assessment does not classify it as an ‘unsafe’ commodity or product.

Dr. Abbott further explained the data needed for different types of novel ingredients. Some of the issues to consider regarding the use of novel ingredients include:

- Safety concerns
- Proposed levels of use of the ingredient
- Approval in other countries
- Availability of assessment reports from other countries
- Presence of impurities in the final food product
- Need for regulation in some cases

He suggested that the “margin of safety” approach be used as a benchmark, first to establish the highest level with no evidence of toxicity (or ADI); then to compare with the proposed level of intake; and finally to establish maximum use levels in foods or no restriction on use level. He also used the case of omega-3 fatty acids as an example to illustrate the safety assessment process.

Overall, response from the NADFC officers and expert committee members was positive, and several questions were raised regarding the evaluation of potential novel food ingredients, such as those used in traditional medicines.

Philippines and Thailand
Risk Assessment of Food Additives

Philippines

The Training Workshop was held on February 24, 2012 at the Century Park Hotel in Manila, Philippines. It was attended by 21 participants from various government agencies involved in food control in the Philippines, including the Food and Drug Administration, the Food and Nutrition Research Institute, the National Meat Inspection Service, the Food Development Center, and the Bureau of Fisheries and Aquatic Resource.

Dr. Rodolfo Florentino, Country Coordinator for the ILSI SEA Region’s Philippines Country Committee, provided the introduction to the workshop while Dr. Suzette Henares-Lazo, Director of the Philippines Food and Drug Administration, provided the welcome remarks. Dr. Elias Escueta, Scientific Advisor to the ILSI SEA Region Philippines Country Committee was the overall chair of the meeting and discussions.

International scientists and experts invited by ILSI SEA Region to share their knowledge and expertise at the Training Workshop included Dr. Peter Abbott from Biosearch Consulting, Australia, who provided an overview of the Principles for the Risk Assessment of Food Additives. Mr. Cronan McNamara from Crème Global, Ireland presented on Estimating the Exposure of Food Additives in the Diet.
Next, representatives from government, industry and academia shared their **perspectives on Risk Assessment**. They were Ms. Cristina A. Oblepias from the Philippines FDA, Dr. George Pugh, from The Coca-Cola Company Indonesia, and Dr. Mario Capanzana, Food and Nutrition Research Institute (FNRI). Finally, Dr. Peter Abbott, shared a **Case Study on Steviol Glycosides**.

The presentations led to a good discussion among the speakers and participants. Some of the questions and comments raised included:

- Whether during the hazard characterization step, data on toxicokinetics is considered, such as in relation to potential accumulation of the food additive in the body;
- Whether the existing safety assessments conducted by JECFA addresses the crude extract or purified extract for stevia;
- Whether there are harmonized guidance documents on risk assessment among ASEAN countries; and
- Whether the data collected from the Philippines National Nutrition Survey by FNRI could be used to for dietary exposure purposes.

It was pointed out by the speakers that steviol glycosides are approved for use according to the Codex Alimentarius General Standard for Food Additives (GSFA). There was limited discussion of dietary exposure aspects for steviol glycosides, which could be partly due to the fact that under their national regulations, the Philippines automatically adopts new food additive provisions under the GSFA and that there is a lack of capacity in the Philippines to undertake dietary exposure assessments.

Mr. Keng Ngee Teoh, Scientific Program Manager from ILSI SEA Region, provided the closing remarks for the Training Workshop.

**Thailand**

A similar Training Workshop was held on February 27, 2012 in Bangkok, Thailand. It was attended by 17 participants from agencies involved in food control in Thailand, including the Thai Food and Drug Administration (FDA), and the National Bureau of Agricultural Commodities and Food Standards (ACFS).

Ms. Pauline Chan, Director of Scientific Programs from ILSI SEA Region, and Dr. Tipvon Parinyasiri, Director of Thai FDA provided the welcome remarks. Dr. Anadi Nithithamyong, from the Institute of Nutrition, Mahidol University in Thailand and who is also Country Coordinator of the ILSI SEA Region Thailand Country Committee, was the chair of the Training Workshop.

Presentations were made by Dr. Peter Abbott, who again provided an overview of the Principles for the Risk Assessment of Food Additives; and Mr. Cronan McNamara from Crème Global, Ireland on Estimating the Exposure of Food Additives in the Diet.

Government, industry and academic perspectives on the risk assessment of food additives were shared by Ms. Jiraratana Thesasilpa from Thai FDA, Dr. George Pugh from The Coca-Cola Company Indonesia, and Dr. Songsak Srianujata, Institute of Nutrition, Mahidol University. Dr. Peter Abbott also shared the Case Study on Steviol Glycosides.

During the discussion among the speakers and participants, questions and comments raised included:

- Exposure assessment by using the national food consumption survey data is not being conducted by Thailand’s ACFS;
- Thailand has already conducted the risk/exposure assessment of steviol glycosides, based on the assumption that 100% of sugar will be replaced by steviol glycosides;
- Dr. Abbott’s sharing of the 30% sugar replacement model from Food Standards Australia New Zealand (FSANZ) might have been a more realistic assumption;
- Safety of steviol glycosides in the crude form, as the approval of steviol glycosides is for the purified form and not for crude form;
- Key challenges include the control measures to be taken, such as limiting categories of foods approved for addition of steviol glycosides.

Ms. Chan provided the closing remarks for the Training Workshop.
The Role of Nutrition and Methods to Assess Early Cognitive Development in Asian Children

The role of nutrition in cognitive development and function has garnered the interest of various stakeholders for decades. In Southeast Asia, research on this topic area has been progressive, such as through nutrient interventions and birth cohort studies. However, cognition studies in infants and children still frequently lack success in demonstrating positive effects of nutritional influences – plausible reasons are the usage of incompatible cognitive assessment methods, and the difficulty in capturing subtle neuropsychological changes in relation to nutritional factors over a short time frame. In addition, other variables such as poverty, parenting behavior, extent of cognitive stimulation in the child’s growing-up environment may impact the relationship between nutritional status and cognitive development.

In October, 2010, ILSI SEA Region held a Symposium on Nutrition and Cognition – Towards Research and Application for Different Life Stages in Malaysia. The symposium highlighted the importance of cognitive assessment when evaluating the impact of nutrition intervention programs.

As a follow-up to the symposium, ILSI SEA Region organized a Seminar on “Nutrition and Early Cognitive Development”, as well as a Workshop on “Assessment of Cognitive Development for Infants and Young Children”. Held on April 16 and 17, 2012 in Singapore, the Seminar and Workshop brought together experts and researchers working in the areas of nutrition and child cognition to address methodological and assessment issues appropriate for measuring cognition in Southeast Asian infants and young children.

### Seminar on Nutrition and Early Cognitive Development

The half-day Seminar had the objectives of outlining the role of nutrition in brain development and in different cognitive domains of the fetus, infant and young child, at their specific developmental periods; as well as sharing of experiences in applying neurocognitive assessment techniques in the Southeast Asian setting.

It was attended by 150 participants, representing the academia and industry sectors as well as government officials, with diverse backgrounds including nutrition and public health, pediatrics, developmental psychology and neurosciences.
Nutrition and Early Cognition: Evidence at Different Phases

Co-chaired by Dr. Corazon Barba, University of the Philippines Los Baños, Philippines, and Dr. Eline van der Beek, Danone Research – Centre for Specialised Nutrition, Singapore, the first session of the seminar described scientific findings that correlate nutritional factors and early cognitive development at specific age ranges.

Dr. Carol Cheatham from the University of North Carolina – Chapel Hill Nutrition Research Institute, USA, gave an overview paper on the Role of Nutrition in Early Cognitive Development. Dr. Cheatham presented evidences that associate pre- and post-natal nutrition with brain and cognitive development. While all nutrients are no doubt important, some have been studied more extensively on their impact at specific developmental stages, namely during pre-conception, fetal, neonate, infancy and toddlerhood periods. Folate and choline, for instance, are necessary before conception to ensure proper neural tube development. Sufficient iodine at pre-conception stage is also crucial for brain development – deficiency at conception and/or the first week of gestation may cause irreversible physical and cognitive damages. Another important nutrient, iron, has been comprehensively studied – it has been shown that iron deficiency may bring forth memory issues at as early as 2 weeks of age, and this consequence may persist even if iron status is subsequently replete.

Iron is also vital after birth for normal functioning of the executive functions cognitive domain. In the recent decade, advancements in omega-3 fatty acids research and their effects on cognitive development have been made as well. In terms of maternal nutrition, omega-3 fatty acids accumulate most rapidly in the brain from the third trimester through the second year of life. However, their postnatal effects are still unclear.

Dr. Cheatham reiterated that the most rapidly developing neural substrate is most susceptible to changes in environment, and nutrition plays a critical role. She emphasized that nutrition has targeted effects on specific cognitive domains such as memory and attention, rather than generally affecting the global brain function. Hence, targeted assessments of specific cognitive abilities should be utilized and transdisciplinary work is needed for research in this area.

Following Dr. Cheatham’s paper, Dr. Suzanne Meldrum from the School of Pediatrics and Child Health at the University of Western Australia, Australia, presented on Child Brain Growth: Impact of Maternal Nutrition. Dr. Meldrum highlighted that the developing brain between 24 and 42 weeks of gestation is particularly vulnerable to nutritional insults. She explained in detail two nutrients, vitamin D and docosahexaenoic acid (DHA), with regard to maternal status and their neurodevelopmental impacts in the offspring. Although the evidence that vitamin D status during gestation may influence brain development has only been appreciated in the last decade, several mechanistic and biological evidences have strongly suggested that vitamin D is involved in brain development and functions. However, experimentally demonstrating the obvious effects of vitamin D inadequacy on cognitive or behavioral endpoints has proven to be difficult and further work is needed.

On the other hand, the effect of DHA on neurodevelopment is widely known. Optimal maternal DHA status is important as it is the predominant structural fatty acid in the brain. DHA provides essential roles including neurotransmission, neurogenesis and protection from oxidative stress. Its current level of evidence has necessitated studies on an omega-3 fatty acid requirement level that is sufficient for proper child brain development.

Dr. Krishnamachari Srinivasan, Head of the Mother and Child Division of the St. John’s Research Institute, India, next spoke on Maternal Nutritional Status during Pregnancy and Cognitive Outcomes in Children. The roles of various nutrients in normal brain functioning and their respective mechanisms were first outlined. Important nutrients during late fetal and neonatal brain development included protein, iron, zinc, copper, long-chain polyunsaturated fatty acids (LC-PUFAs) and choline.

Dr. Srinivasan also presented a birth cohort study from Mysore, India, which hypothesized that higher maternal plasma folate and vitamin B12 during pregnancy are associated with better developmental outcomes in the offspring.

Results showed that there was a 0.2 standard deviation (SD) increase in the children’s cognitive measures per SD increase in maternal folate level. However, no association was found for maternal vitamin B12 levels. Dr. Srinivasan highlighted that in conducting related studies, a multitude of intermediate variables such as parental factors, home environment and socio-economic status among others have to be carefully considered as they may confound the causal link between maternal nutrition and later cognitive outcomes in children.

Hence, thorough investigations on intersecting variables are required using long term prospective follow-up studies.

The following speaker, Dr. Stewart Forsyth from the University of Dundee, UK, gave his presentation on Postnatal Nutrition and Cognitive Development. Infant studies on nutrition and cognitive development have been dominated by investigations on the role of LC-PUFAs, especially DHA, during recent decades. Dr. Forsyth identified learning points from this research in relation to postnatal nutrition. Apart from increased understanding on the role of DHA in brain and cognitive development, a range of assessment methods for measuring information processing, problem solving, attention control, and visual function during infancy has been developed. The next steps include greater clarity on optimum DHA requirements as mentioned by Dr. Meldrum, as well as an agreement on the optimum supplementation dose and duration in at-risk mothers, infants and children. One key methodological issue recognized was that nutrients do not act in isolation but often have a role in a complex sequence of events. Choice and timing of assessment is also critical as nutritional influences are likely to be subtle due to the many varying factors affecting cognitive development. Furthermore, DHA research has uncovered the possibility of an underlying genetic predisposition and also potential gender effects.

Other than DHA, iron has received substantial research interest for several years and adverse effects of its deficiency are largely known. However, iron deficiency remains highly prevalent across both developing and developed countries. The role and effects of other nutrients during the postnatal period, such as iodine, zinc, vitamins A, D and B12, still require investigation. It is important to note what the research priorities are for both the developing and developed world, and whether recommendations on...
nutrient supplementation, or an overall well-balanced diet instead, should be given.

Dr. Tippawan Pongcharoen from the Institute of Nutrition, Mahidol University, Thailand, proceeded with her paper on **Impact of Micronutrient Interventions on Cognitive Outcomes in Schoolchildren in Thailand**. Dr. Pongcharoen shared four intervention studies conducted in Thailand, which investigated the impact of micronutrient supplementation and fortification on cognitive developmental outcomes. The interventions were carried out in different parts of Thailand and comprised short- and long-term follow-up studies. The effect of a range of micronutrients, including iron, zinc, vitamin A, and iodine, were studied using cognitive assessment methods such as the Raven Progressive Matrices, Test of Nonverbal Intelligence II, and the Wechsler’s Intelligent Scale for Children III. School examination scores were also used.

The interventions showed little positive impact on cognitive improvement. A learning outcome of this series of studies was that global cognitive tests may not be sensitive enough in detecting the impact of micronutrient interventions. The choice and design of cognitive tests is also important – specifically, translation and standardization of Western-derived tests to suit the local context was needed. Other issues to consider for micronutrient supplementation and fortification on cognitive developmental outcomes are the subjects’ age and stage of development, the severity of nutrient deficiencies and deficiency level of other nutrients other than those supplemented or fortified, as well as the timing, duration and dose of nutrient intervention.

**Measuring Neurocognition: Challenges and Opportunities in Southeast Asia**

The next session of the Seminar focused on neurocognition assessment methodologies and the key cultural issues to consider when assessing cognitive development in the Southeast Asian setting. The session was co-chaired by Dr. Geok Lin Khor, International Medical University, Malaysia, and Dr. Francisco Rosales, Abbott Nutrition Asia Pacific R&D, Singapore.

Dr. Steven Reznick from the Center for Developmental Science at the University of North Carolina – Chapel Hill, United States, gave a video presentation on the topic **Methods for Assessing Cognitive Development in Young Children**. He first explained that assessment of cognitive development can be general or specific. At the general level, “intelligence” characterizes the general ability to perform relevant tasks, but may only pick up profound effects. Measuring intelligence in nutrition research may not depict the effect of a particular nutrient as it lacks focus on specific cognitive components. At the specific level, cognitive development can be viewed as a combination of various constructs. Some aspects include memory, concentration/attention, language and knowledge, there is, however, no definitive list of all components of cognition. Some measurement techniques effective with infants and toddlers are response to novelty, deferred imitation, and delayed response.

Nutrition research assessing the effect of particular nutrients may be more productive if specific cognitive functions are measured. Certain variables and measurement techniques will be more useful than others for nutrition researchers seeking communication with consumers. Researchers assessing cognitive development in young children should also take note of the usage of norms and cultural perspectives specific to the region.

The next speaker, Dr. Anne Rifkin-Graboi, Singapore Institute of Clinical Sciences (SICS), Singapore, presented a paper on **Tailoring Neurocognitive Assessment Methods for Singaporean Children**. Dr. Rifkin-Graboi shared her experience in measuring neurocognition in the Singaporean context and illustrated examples from the SICS Neurocognitive Development Centre. Firstly, utilizing methods common to Western investigations was found to have certain pros and cons. Methodologies that involve specific cognitive constructs may be influenced by culture – for instance, the language that an infant first learns affects his way of forming representations, which in turn affects memory when a pictorial test is administered. Culture and background of the child may also affect behavior and assessment outcomes, as well as stimuli preferences and administration. To modify existing methodologies, some questions to consider are:

- Whether there are modifiable aspects of the task that does not influence task integrity,
- Whether scoring protocols are valid, and
- Whether additional data could be collected to aid in interpretation of results.

Cultural aspects such as parenting practices, language and physical characteristics amongst others are
important in ensuring accurate measurement. These factors may either be associated with or may influence performance, thus must be carefully examined when assessing cognitive development in the diverse Southeast Asian region.

The last presentation was given by Dr. Leher Singh of the Department of Psychology, National University of Singapore, Singapore, titled 'Cognitive and Language Development in Multilingual Children.' Dr. Singh presented an overview of the process of language learning, from phonetic perception to developing lexicon and syntax, in monolinguals and bilinguals. Monolinguals and bilinguals present certain learning and mental differences such as vocabulary range, language transfer or intrusion, and cognitive processes. Research on cognitive development outside of the domain of language has shown that there are certain interactions between the number of languages learned and a child's performance on cognitive tasks. For example, it has been observed that bilinguals perform better than monolinguals at theory-of-mind tasks at a younger age, but fare worse at verbal fluency and picture-naming tasks.

Bilingualism is associated with gains in cognitive processing, and costs in psycholinguistic processing at the level of the word. As it appears that these groups have unique differences in their development of language acquisition and cognitive pathways, methodological considerations may be noteworthy when constructing cognitive assessments for multilingual children in this region. Issues such as language pairings, social status of languages learned, and language dominance may require further exploration.

At the end of the session, Mrs. Boon Yee Yeong summed up the topics discussed and briefly reported the identified research gaps and strategies. In closing the seminar, all speakers and participants were thanked for contributing to the seminar and for sharing their expertise.

Workshop on Assessment of Cognitive Development in Infants and Young Children

This 1½-day Workshop, following on from Seminar, focused on the application of neurocognitive assessment techniques appropriate for infants and young children in the diverse cultural environments that characterize Southeast Asia. Participants comprised researchers who are involved in or are embarking on studies related to assessment of cognitive functions in infants and young children.

Workshop aimed to provide a forum to:
1. Discuss psychological and neurological cognitive assessment techniques or instruments to measure the impact of nutrition on cognitive development in infants and young children;
2. Discuss ways to adapt and validate cognitive assessment instruments for Southeast Asian populations, in view of socioeconomic and cultural factors; and
3. Share experiences and identify methodological barriers faced by researchers in the cognitive assessment of infants and children in Southeast Asia, as well as find possible ways to overcome these barriers.

Assessing Cognitive Development of Different Age Groups in Asia

Participants raised the following issues regarding the assessment of cognitive function in infants and children:

- In general, there appears to be a poor relationship between global tests which assess general intelligence and children’s academic performance. The use of tests that assess specific domains of cognitive function, such as memory, attention, language, and executive function tests, may provide better results in relation to school performance.
- Research issues in the assessment of cognitive function include the need for good study design, adequately large sample sizes, control of factors like socio-economic status (SES), education, gender, and manpower availability. In addition, different tests are needed for different ages, contributing to logistical difficulties.
- There is a need for the development of standardized cognitive tests appropriate for use in Asia and Southeast Asia. Several assessment instruments are adapted from Western countries, and standardized instruments based on norm values for local populations are limited. As a result, the use of cognitive tests to assess the effects of nutrition intervention becomes problematic.
- Practical tests that are convenient and reliable for field use are needed.
- Cognitive assessment tests should provide useful information for planning nutrition and development programs. This implies that universal tests currently being used in Asian countries may need to be revised so that they focus on specific domains of cognition found to be more closely associated with nutrients and nutrient intake.

Population-centric Methods

Cognitive function can be measured using quantitative and qualitative methods. Qualitative approaches are descriptive in nature while quantitative tests measure relationships between specific variables. Standard psychological tests yield quantitative results. A few of these instruments are available online, but they have to be purchased, and subsequently translated and adapted to the culture in which it will be used.

Other examples of quantitative assessment methods include electrophysiology and neuroimaging techniques, both of which assess brain function. One advantage of these methods is that smaller sample sizes are needed. However, they are difficult to implement in the field setting and are more feasible for use in a laboratory setting. In the case of electrophysiology, one disadvantage is that data may be difficult to integrate and some data can be lost due to noise. Another disadvantage is that these instruments are expensive.

Culture-specific Adaptation of an Instrument

Dr. Srinivasan gave an example of how
an instrument can be adapted to make it suitable for an ethnic population. He described the adaptation process of the Kaufmann Assessment Battery for Children, second edition (KABC-II), for use among 6- to 10-year old children from families of low socioeconomic status in Bangalore, India.

Adaptation refers to procedures in which an instrument that is developed for one cultural group is rendered appropriate for use in another cultural group, thereby minimizing bias. Adaptation goes beyond translating an instrument or producing a linguistically equivalent version in another language. Dr. Srinivasan explained that the procedure consists of an iterative process of modifying an instrument and using judgmental evidence to examine the adequacy of the modifications. Aside from language, one needs to capture the ‘idioms of expression’ present in that culture.

**Issues and Questions for Consideration**

Participants further explored the many issues and questions arising from the Workshop’s topic, there was a lively discussion on the following:

- Whether permission from the publisher may be needed in order to adapt an instrument.
- The specific assessment methods are required at the population level for screening, as opposed to detailed assessments during and after nutritional interventions.
- Tests that would be practical for use in large population surveys, for instance, to assess cognitive function among children who are stunted or have low hemoglobin levels.
- Whether the respondent should be the child’s primary caregiver, who may not necessarily be the child’s mother (e.g., it could be a grandparent or domestic helper).
- Whether there are different tests for assessing short-term vs. long-term cognitive impact of nutrition interventions, and how long an intervention should be implemented for before changes in cognition are seen.
- Tests that can be done to convince policymakers to provide funds for supplementation.

**Conclusion and Recommendations**

In summarizing the information shared and issues discussed at this Workshop, the participants recommended that training in the application of selected psychological tests for researchers in Southeast Asia would be needed. Translating and adapting an instrument would involve a multi-disciplinary collaboration, and the invited experts recommended that members of the multi-disciplinary team should include a child psychologist who is bilingual, translators in the community e.g. bilingual mothers and teachers, people who are familiar with the local culture and who can help capture the community’s ‘idioms of expression’, a statistician to assess the instrument’s reliability and validity, and a bilingual nutritionist.

It was also suggested that ILSI SEA Region could consider the possibility of coordinating a multi-country adaptation of an instrument for the cognitive assessment of Southeast Asian children. This instrument should be practical for field use and can augment the data collected during large-scale nutrition surveys.
Infant and Young Child Nutrition in Southeast Asia

ILSI SEA Region organizes a series of Expert Consultations on Infant and Young Child Feeding. Supported by the Technical Committee on Infant and Young Child Nutrition, these Expert Consultations aim to "generate and promote relevant science-based information that will help improve nutritional status, growth and development of infants and young children in Southeast Asia." The framework for the consultations is the United Nations’ Millennium Development Goals, specifically the goal to reduce child mortality, and the Lancet’s recommendations to prevent undernutrition from conception through 24 months of age, as a way of reducing child mortality.

Members of the Expert Panel include experts and academics in infant and young child nutrition from various Southeast Asian countries as well as China.

The first Expert Consultation Meeting was held in March 2009, while the second meeting was held in April 2011. The third meeting in series was held in July 2012.

In addition to the series of Expert Consultation Meetings, ILSI SEA Region’s Technical Committee on Infant and Young Child Nutrition also organizes a series of seminars to provide updates and exchange scientific information in this area. The seminars are held in different Southeast Asian countries, allowing experts from each of these countries to share local data, as well as identify country-specific challenges and research gaps. Seminars have been held in Indonesia (2009), Philippines (2010) and Thailand (2011). The most recent seminar was held in Vietnam, in September 2012.

3rd Expert Consultation and Planning Meeting on Infant and Young Child Nutrition

In July 2012, ILSI SEA Region organized its 3rd Expert Consultation and Planning Meeting on Infant and Young Child Nutrition, held in Singapore. The meeting was attended by members of the Expert Panel from Malaysia, Thailand, Philippines, Indonesia, Vietnam, and China.

The objectives of the meeting were:

- Discuss the influence of maternal nutrition on offspring health and its implications for program planning and intervention;
- Examine current knowledge and issues in Southeast Asia regarding infant and young child feeding (IYCF) practices; and
- Identify knowledge gaps and priority topics for future knowledge dissemination to help improve IYCF practices in the region.

The discussion during the morning session focused on the impact of maternal nutrition on offspring health, while the afternoon session examined current knowledge on infant and young child feeding practices in Southeast Asia and identified gaps and priorities for future action.

Issues and Priorities for Action

During the meeting’s discussion, several issues and priorities for action were identified.

Use of WHO indicators for assessing infant and young child feeding practices

The Expert Panel agreed that the new WHO indicators for assessing infant and young child feeding practices should be regarded as the minimum required data for assessing the situation on infant and child feeding in the region, and that their use should be adopted in national surveys. However, ways to improve the use of the indicators should also be studied.

The following points need to be considered, among others:

- Operationalizing the denominators of some indicators by specifying the type of populations to include in the calculations.
- Undertaking country-specific validation of indicators against measured dietary intakes and nutritional status of infants and children, and refining the indicators based on the results.
- Documenting cultural variations/differences that may influence the context in which the indicators are used in different countries in Southeast Asia.
- The need to consider how better harmonization regarding the use of WHO indicators in both the Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) can be achieved, to allow comparability of the situation across countries and to provide a clearer situation analysis. Currently, the indicators used are not consistent between the two surveys.
- The WHO infant and child feeding guidelines can be adapted for use in Southeast Asia by translating these into locally applicable portion sizes. This will allow easier use and understanding among users, which should facilitate behavior change.

Safety monitoring of use of vitamin-mineral supplements, fortified foods and fortificants

The safety of nutrient fortificants and the level of consumption of fortified foods and vitamin-mineral supplements by infants and young children were identified as future priorities by the Expert Panel. There are certain segments of the population, such as the middle class, that provide infants and young children with self-prescribed vitamin and mineral supplements, as well as fortified food products. The Panel emphasized the need to monitor this group regarding risk of excess vitamin/mineral consumption, and whether national levels of fortification, together with supplement use, pose a risk for excess micronutrient consumption or potential toxicity in infants and young children.

The Expert Panel acknowledged that a more in-depth assessment of fortification strategies in different countries was needed and can be discussed in another venue. Areas that can be examined
include: appropriate food vehicles, dosage needed, established safety levels of fortificants, effects of biofortification on consumption of fortificants, effectiveness of fortification vs micronutrient supplementation.

**Maternal employment and breastfeeding**

An increasing number of women in Southeast Asia are joining the workforce. Studies indicate that maternal employment reduces the prevalence and duration of breastfeeding. In order to increase breastfeeding rates, the needs of breastfeeding mothers in the context of their work environment have to be identified. This would include examination of existing work environments and asking the following questions: Do workplaces provide breastfeeding stations? If so, are these stations being utilized? What are the specific needs of working mothers in different types of occupations and how can these be supported? What are the nutritional requirements of lactating women in different work categories? The expert panel also suggested the development and distribution of reader-friendly communication materials explaining the importance of continued breastfeeding among working mothers, to help change attitudes of employers and the general public.

**Behavior change communication**

Changing infant and child feeding behaviors in the context of cultural background was seen as an important issue that needs to be addressed in the region. In particular, there is not enough data on "responsive feeding", how this applies to Asian families and its effects on child health. Examples of communication to achieve behavior change include the translation of WHO guidelines for complementary feeding into locally applicable portion sizes and developing messages on how to deal with picky eaters and temperamental children, using different messages to suit specific groups (e.g., parents, surrogate caregivers).

**Education of health workers, medical personnel, caregivers**

Current feeding recommendations are not reflected in the curriculum in many schools in the region. The Expert Panel agreed that developing up-to-date learning materials for health workers, doctors and nurses based on WHO and UNICEF recommendations, revising outdated school curricula, and re-training medical personnel in essential newborn care should be considered a priority in order to promote appropriate breastfeeding and complementary feeding practices in the healthcare setting. For caregivers, food safety education (e.g., frequent hand-washing and using clean water in infant food preparation) is important.

**Effects of maternal nutrition on offspring health**

With regard to the effects of maternal nutrition on offspring health, the Expert Panel agreed that the following issues need to be examined in Southeast Asia:
Country-specific recommendations on the type of supplements that optimize fetal outcomes (e.g., multiple micronutrients vs. iron folate tablets vs. single nutrients). For instance, in the Philippines, a study on pregnant women showed improved birth outcomes using multiple micronutrients compared with iron folate tablets.

Recommendations for teen pregnancies should be generated for countries in the region.

Effects of emerging nutrient deficiencies and excess (e.g., vitamin D, vitamin K, iodine, nutrient content of breastmilk) on birth outcomes and infant development should be examined.

Nutrition of infants and children during calamities (which are frequent in Asia) need to be studied.

**Tools for dietary assessment**

The ProPAN and Opti-food linear programming tool were feasible tools for use in the region to assess levels of food intake, identify culturally-acceptable complementary foods and specify portion sizes. However, limitations would be the need for users training, food composition data may not be available or updated, and that portion sizes relevant to each country need to be determined.

**Seminar Infant and Young Child Nutrition: Addressing Nutritional Problems in Vietnam**

On September 18, 2012, ILSI SEA Region organized a seminar in Hanoi, Vietnam titled “Infant and Young Child Nutrition: Addressing Nutritional Problems in Vietnam”. The objectives of the seminar were to share the latest updates on nutritional and health status of infants and young children, as well as relevant health policies, in Vietnam; share current knowledge on infant feeding practices, as well as relevant experiences, approaches, strategies and programs to address nutritional problems in infant and young children in SEA Region; identify key nutritional issues affecting optimal growth in Vietnam (e.g., micronutrient deficiencies, obesity, etc); identify research and knowledge gaps in programs for improving nutrition and health status of infants and young children in Vietnam; and to discuss strategies to combat the double burden of under- and over-nutrition in Vietnam.

A key session of the seminar focused on Current Programs and Plans to Improve the Nutritional Status of Children in Vietnam.

The first presentation was made by Dr. Le Thi Hop from the National Institute of Nutrition, Vietnam, who described the child nutrition situation in Vietnam and the country’s national nutrition strategies. Prof. Hop shared that the General National Survey in 1985 showed that the prevalence of underweight and stunting among children under five was very high, at more than 50%. However, in the past two decades, Vietnam has achieved success in reducing the prevalence of malnutrition among children, as well as improving the nutritional status of the general population. During this time, the prevalence of underweight and stunting gradually reduced by about 1.5% a year in between 1995 to 2000, and by 1.2% a year between 2000 to 2010; the prevalence of Chronic Energy Deficiency (CED) among reproductive women reduce from 41.8% in 1995, to 28% in 2000, 21.5% in 2005 and 19.6% in 2010. The prevalence of vitamin A deficiency and anemia among children under five years reduced remarkably.

In reaching this achievement, the government has approved the National Planning for Action of Nutrition and Nutrition Strategies for each period with an established system for implementing and executing from central to community levels. Prof. Hop then gave a summary of the main achievements and challenges the government faced. The key achievements included strong commitment of authorities at all levels, increased investment from the State Budget, and the reduced rate of child malnutrition. The challenges included a child stunting rate that still remains high (29.3% in 2010), as well as slower rate of reduction and wide disparities among regions. In addition, the prevalence of overweight/obesity among children under 5 years had increased: from 1.7% in 1995, to 2.2% in 2005, and 4.8% in 2010. This has resulted in Vietnam facing the double burden of mal and over-nutrition.

Prof. Hop also updated the audience that the National Nutrition Strategy for the period 2011 to 2020 was approved by the Government of Vietnam (February 22, 2012) with this general objective: “By the year 2020, the diet of Vietnamese people will be improved in terms of quantity, balanced in terms of quality, be hygienic and safe. Child malnutrition will be further reduced, especially stunting, thus improving physical status and stature of Vietnamese people. Obesity/overweight will be managed, contributing to the control of nutrition-related chronic diseases”. In further details, the 6 specific objectives are to:

1. Continue to improve people’s diet in term of quantity and quality;
2. Improve the nutritional status of mothers and children;
3. Improve micro-nutrient status;
4. Effectively control overweight and obesity and risk factors of nutrition related non-communicable chronic disease in adults;
5. Improve the people’s knowledge and practices on proper nutrition; and
6. Reinforce capacity and effectiveness of nutrition network in both community and health facilities.

The next presentation was made by Dr. Nguyen Duc Vinh, Deputy Director of the Maternal and Child Health Department in the Ministry of Health, Vietnam. Dr. Nguyen described the maternal and child health situation in Vietnam, the challenges being faced, and the solutions being implemented to address these challenges. The nutrition situation in Vietnam has steadily been improving, such that the country is able to achieve MDGs 1, 4, 5. The latest neonatal and under-5 mortality rates are 12% and 17%, respectively. Among under-5 children, malnutrition in terms of underweight decreased from 21.2% in 2008 to 17.5% in 2010, while stunting decreased from 31.9% to 29.3% in the same period. The maternal mortality ratio is 64 per 1,000 live births. This figure is lower than those of the Philippines and Indonesia, but higher than those of Malaysia and Thailand.

Despite significant achievements, infant mortality rate remains high at 15%. There are large disparities among regions in terms of maternal and child health. The difficulties being faced include inadequate quantity and quality of human resources; facilities and equipment in many rural health centers that are poor, outdated, and unable to meet the diverse demands for health care in the community; low quality of services, particularly the basic emergency obstetric and newborn care, at the district and commune levels; limited funds that are unable to meet the demand for health care.
Strengthening and improving the maternal and child health system requires the interest and commitment of authorities at all levels, as well as support of international organizations.

Finally, Dr. Truong Hong Son, Researcher at the Nutritional Network Coordination Section of the National Institute of Nutrition, Vietnam discussed current programs and plans to improve the nutritional status of children in Vietnam. The reduction of malnutrition and improvement of the nutritional status of children under five were stated in a Resolution of the Congress of the 9th and 10th National Communist Party. Activities that have been implemented include growth monitoring, nutrition information and education (IEC), vitamin A supplementation, de-worming, nutritional rehabilitation and aid for disaster areas, and nutrition surveillance.

The growth monitoring program weighs children below 2 years at least once every 3 months. Malnourished children under-5 years are weighed monthly. On National Micronutrients Day (1st day of June annually), all children aged 0 to 5 years are weighed, with more than 90% of children in the whole country covered. Nutrition IEC is implemented through the central and regional television network, Vietnam radio, central and industry press newspapers that pass down information from the central government stations down to the provinces and district and commune levels. In poorer provinces, vitamin A supplementation is provided for children aged 6 to 60 months, accompanied by de-worming of those aged 24 to 60 months. All children aged 6 to 36 months are given vitamin A supplements. Rehabilitation services for severely malnourished children have been set up in orphanages, focus nutrition communes, and disaster areas. Nutritional surveillance systems have been set up in various hospitals and university institutes throughout Vietnam.

During the period of 2011 to 2015, Vietnam aims to achieve the following goals: 1) prevalence of underweight children below 14%; 2) prevalence of stunted children below 25%; 3) prevalence of overweight and obesity in children 0-5 years below 5%, with no provinces having child obesity rates above 10%; 4) 90% of children under 3 years with severe malnutrition should receive emergency nutrition interventions, and all deaths in children under 3 years related to severe malnutrition reduced to 17.3%; 5) prevalence of anemia among pregnant women below 20%; and 6) reduce the incidence of sub-clinical vitamin A deficiency among children taking vitamin A supplements. ☺

ILSI SEA Region Invited to Attend WHO Regional Committee Meeting for the Western Pacific

ILSI SEA Region Executive Director Mrs. Boon Yee Yeong and President Mr. Geoffry Smith attended the 63rd session of the WHO Regional Committee Meeting for the Western Pacific held on September 24 to 25 in Hanoi, Vietnam. ILSI SEA Region was invited to attend in the capacity of a non-governmental organization (NGO). Mr. Smith delivered a statement on the ILSI SEA Region’s activities during the agenda item on Maternal, Infant and Young Child Nutrition.

Nutrition is high on the agenda of the Regional Committee for the Western Pacific. WHO is intensifying efforts toward Scaling Up Nutrition, a multi-stakeholder movement to fight hunger and under-nutrition using cost-effective interventions. Nutrition will be integrated not only in health programs but also in agriculture, education, employment, social welfare and development programs.

The WHO Regional Committee is set to endorse a resolution to scale up nutrition, based on the WHO Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition. It called for increased investment in 2012 to 2025 to expand nutrition interventions, with targets to reduce substantially the double burden of malnutrition and related mortality and morbidity, including stunting and wasting, anemia in women, and low birth weight. The plan also seeks to increase exclusive breastfeeding and to stop the rapid increase in obesity among children.

Mr. Smith shared the recommendations of ILSI SEA Region’s 3rd Expert Consultation and Planning Meeting on Infant and Young Child Nutrition, held in July 2012 in Singapore. Among these was the fact that there were insufficient studies on infant and young child feeding practices in Southeast Asia, which limits the extent of understanding on the current child feeding situation in the region. One suggestion for an intersectoral activity was the creation of a working group to examine the applicability of the WHO indicators for assessing infant and young child feeding practices in the context of Southeast Asia. ILSI SEA Region can coordinate activities that look into the validity of these indicators for each country in the region, and find ways to improve their use so as to accurately reflect adequacy of feeding practices. The use of valid indicators will lead to a more accurate situation analysis of these practices which in turn will lead to more effective interventions. ☺
Latest Science on the Health Benefits of Polyphenol-rich Foods and Beverages

On March 22, 2012, ILSI SEA Region Australasia brought together a highly accomplished panel of experts to present and discuss the latest science on the health benefits of polyphenol-rich foods and beverages. Co-organized with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, the one-day seminar was held at Glenelg in South Australia.

Following a warm welcome and introduction by ILSI SEA Region Australasia’s President Dr. Dave Roberts, Prof. Jonathon Hodgson from the University of Western Australia opened proceedings with an informative introduction to the science of polyphenols. He followed with an overview of the Heart Foundation of Australia’s position paper on polyphenol-rich foods, released in 2010, focusing particularly on tea, cocoa, coffee and red wine. Tea consumption and cocoa beverages made from raw cocoa powder were encouraged as part of a healthy balanced diet. However, chocolate consumption, and drinking of coffee or red wine were not supported as methods of reducing the risk of cardiovascular disease (CVD).

Updates on the Scientific Evidence

This review led into a presentation of some of the latest epidemiological findings by Assoc. Prof. Rob van Dam from the National University of Singapore. He included some compelling evidence for dose dependent effects of cocoa and tea on CVD risk reduction and of anthocyanins (predominantly from blueberries) and coffee intake on type 2 diabetes risk reduction. He also offered challenges to improve the quality and clarity of population-based studies including evaluating the stability and duration of chronic exposures to these nutrients in the studied populations.

Prof. Kevin Croft of the University of Western Australia and Prof. Alan Crotzer from the University of Glasgow, UK (currently a visiting scholar with CSIRO) enlightened attendees on the bioactivity and metabolism of polyphenols. They provided evidence that although polyphenols generally appear to have antioxidant effects on specific targets, they are not always mediated via a direct antioxidant effect in vivo. It was also clear that these specific target effects are quite different for different polyphenols. The complexity increases when metabolism is considered. The studies showed that there is a wide range of different plasma kinetics and a broad array of different metabolites with each different polyphenol studied. Different polyphenol compounds, and even the same compound, undergo absorption at different levels of gastric transit and consequently, different metabolites are produced. The critical message from this work is that these metabolites are by and large the polyphenol compounds found in the blood and tissue. Therefore, evidence of mechanisms of action in vitro need to be adjusted for differences in these secondary compounds rather than the ingested forms.

Asst. Prof. Britt Burton-Freeman from the Illinois Institute of Technology, USA, then discussed the benefits of fruit-derived polyphenols during post-prandial glucose and lipid induced oxidative stress and inflammation. This included some promising effects of wine (and grape seed extract and grape juice) and strawberries on minimizing the consequences of these stressors. Some of the evidence they have found are reduced post-prandial insulin, IL-6 & IL-1β and markers of fibrinolysis and improved flow mediated dilatation.

Dr. Roger Hurst from the New Zealand Institute for Plant and Food Research discussed his organization’s work in evaluation of polyphenols, mainly from blackcurrants, and their possible application in inflammatory lung conditions and in enhancing the benefits of exercise. He outlined some encouraging results in modulation of inflammation, as opposed to strict attenuation. He also pointed out that some inflammation is physiologically beneficial in certain instances. This concept was most evident in results he described whereby following muscle damaging exercise, the initial inflammatory response was enhanced and the delayed response attenuated with blackberry extract supplementation.

New Developments in Polyphenols Research

The next session of the seminar provided an update of some of the latest developments in polyphenol research. Dr. Roman Buckow of CSIRO Food & Nutrition, covered the experimental
work currently involved in examining how best to retain and preserve polyphenol content in packaged foods. Besides amusing the audience with his perplexity over possible alternatives to the consumers’ cries for convenient and organic foods, he outlined some interesting new approaches to food preservation. He mentioned ongoing work looking into high pressure and pulsed electric field processing, but it is currently unclear if these will offer benefits over traditional heat processing methods for polyphenol-rich foods and beverages.

Dr. Alison Coates from the University of South Australia presented some of the latest findings on the vascular benefits of cocoa, resveratrol and wild green oat extract. While all have clear effects on FMD, the oat extract also appears to increase the responsiveness of cerebrovascular auto-regulation. Assoc. Prof. Russell Keast from Deakin University, Australia then highlighted some exciting work investigating the health effects of olive oil that has redirected focus from the beneficial fatty acid profile to the phenolic content. Studies had found an intriguing link between the peppery sensation olive oil creates in the throat and ibuprofen. It appears that the compound responsible for this sensation (Oleocanthal) has similar COX inhibition activity to ibuprofen such that three tablespoon of extra virgin olive oil may deliver 10% of the anti-inflammatory effect of a single dose of ibuprofen. This low level chronic anti-inflammatory effect may go some way to explain the well documented epidemiological health benefits. Finally, Aaron Tan from CSIRO Food and Nutritional Sciences presented CSIRO’s work on identifying and evaluating polyphenol-rich indigenous Australian fruits. The most promising of those investigated appears to the Kakadu plum, which is found widely across central northern Australia. The preliminary in vitro evidence of antioxidant and anti-inflammatory effects were promising.

Industry Perspectives and Consumer Communications

The final session of the day provided the opportunity for government officials and academics in attendance to hear the industry perspective. Dr. Roger Bektash from Mars, Australia chaired a dynamic session that began with Ms. Hazel Fowler from FSANZ advising the audience on how to communicate health information about food products to consumers. She shared some interesting results about the many ways that health information, particularly those involving “functional foods”, can be undervalued or misinterpreted. She added that the “modern health worrier” is a subset of the population that is potentially more receptive to the benefits of polyphenols. However, the best way to communicate more targeted advice about specific properties of different functional foods appears to remain a challenge.

Three case studies of consumer communication approaches by leading industry representatives were presented. Ms. Katherine Tocchini from Unilever Australia shared with the audience the transition that the company had made – from using the term “antioxidant” to the specific polyphenol term “tea flavonoids” and their “health benefits” to reflect the changed scientific consensus of antioxidants. Ms. Tocchini also highlighted the challenge that Unilever faces in transferring the consumer awareness observed for antioxidants to the benefits of polyphenols. Next, Dr. Leisa Rydges from Nestle Oceania detailed a contrasting approach by Nestle in educating the consumer about the higher phenolic content in the company’s Greenblend coffee. Their market research showed that the consumer was familiar with the term ‘antioxidant’ (despite not always understanding the science) and thought that tea was a good source of antioxidants. This provided the opportunity to inform consumers that Greenblend has 70% more antioxidants than green tea, thus promoting coffee as a “healthier” alternative. Dr. Roger Bektash of Mars took a different tack, and informed the audience of the steps Mars is taking in attempting to provide a clear, factual and responsible message to consumers about the health effects of cocoa and of the questions that must be considered to elucidate the facts in order to provide this message. For example, is there sufficient data to determine dose effects, are the effects studied meaningful for public health and are the mechanisms of action understood?

The seminar concluded with an active and thought-provoking discussion among the audience and speakers on ways to communicate the benefits of polyphenol-rich foods and beverages to the consumer.
Nutrition Labeling, Claims and Communication Strategies

Since 2001, ILSI Southeast Asia Region (ILSI SEA Region) has organized a series of meetings to identify areas of similarities and differences among permitted nutrition labeling formats and claims between the ASEAN countries, as well as to explore the potential of harmonizing nutrition labeling and claims regulations in Southeast Asia. These meetings also serve to discuss emerging issues on nutrition labeling and claims.

On August 29 to 30, 2012, ILSI SEA Region, in collaboration with the Food Science & Technology Association of Thailand (FoSTAT) and the Food and Drug Administration (FDA) of Thailand, conducted the 7th Seminar on Nutrition Labeling, Claims and Communication Strategies.

The seminar’s objectives were to:

- Provide an update on international and regional developments in nutrition labeling, nutrition and health claims, and related issues
- Address the use of Front-of-Pack (FOP) signposting schemes in the region
- Identify opportunities and challenges related to the utilization of nutrient profiling in nutrition labeling and claims, marketing and communications
- Discuss communication effectiveness using nutrition labels and claims

About 180 participants comprising government officials and regulators, the academia and industry attended the 1½-day meeting. Mr. Geoffrey Smith and Mrs. Darunee Edwards, President of ILSI SEA Region and President of FoSTAT, respectively, opened the seminar.

Nutrition Labeling and Claims: Regulatory Updates and Future Directions

Co-chaired by Dr. E-Siong Tee, Scientific Director of ILSI SEA Region, Malaysia, and Dr. Anadi Nitthayamong, Mahidol University, Thailand, the first session of the seminar saw representatives from Southeast Asia and other regions sharing national and regional updates on nutrition labeling and claims regulations. The first presentation was on Nutrition Labeling and Claims: Codex Standards Updates by Dr. Tee, summarizing work by the Codex Committee on Nutrition and Foods for Special Dietary Uses (CCCNFSDU) and the Codex Committee on Food Labeling (CCFL) from 2010 to 2012. One subject on nutrition labeling under review is on Nutrient Reference Values (NRVs) and the references linking it with non-communicable disease risk reduction. NRVs associated with non-communicable disease risk have been established for saturated fatty acids and sodium.

In the area of nutrient declaration, Codex Alimentarius Commission (CAC) has amended the Guidelines on Nutrition Labeling to include saturated fat, sodium/salt and total sugars in the list of nutrients that are always declared, in addition to the existing four: energy, carbohydrate, protein and fat. Additionally, it was proposed that nutrient declaration be made mandatory for all pre-packaged foods. Other recent work is in the area of nutrient content claims and comparative claims, such as amendments to the conditions of claims in relation to sodium and trans-fatty acids, as well as the inclusion of a new section on ‘non-addition’ claims, namely claims on non-addition of sugars and sodium salts to food. Dr. Tee stressed that as developments of Codex Alimentarius have important implications on national regulations in Southeast Asia, it is important for governments and the food industry to monitor and actively participate in their discussions.

Nutrition Labeling and Claims: Updates from Southeast Asia

It is apparent that national regulations on nutrition labeling and claims in Southeast Asia are at various stages of development and implementation. In this session, representatives from the various countries shared recent updates in ASEAN on general food labeling regulations as well as nutrition labeling and claims regulations, including definitions, required formats, and the conditions for mandatory and voluntary nutrition labeling and claims.

Nutrition Labeling and Claims: Updates from Other Regions

Updates on the current regulatory status of nutrition labeling and claims in India were shared by Dr. D. B. Anantha Narayana, Foods, Home and Personal Care Consultant, India. He reported that the enactment of a new Food Safety & Standards Act (FSSA) and setting up of the Food Safety Standards Authority of India (FSSAI) in 2006 saw the repealing of more than 20 different regulations governing foods. Due to the massive scale of the exercise, provisions related to food labeling, including nutrition labeling and claims have not been fully reviewed. Authorities are preparing guidelines for claims based on Codex, in consideration of available scientific
data and supplementary information, such as a food’s history of use and traditional knowledge base, as well as recommendations by the industry and nutritionists. The Advertising Standards Council of India (ASCI) has been tasked to oversee and control the use of exaggerated, misleading or unsubstantiated claims. However, the process of claims approval, whether there will be preapproved claims, and the extent and nature of scientific evidence required for substantiation of health claims remain uncertain. The guidelines for claims are expected to be available by the end of 2012. Next, Dr. Sean Strain of the University of Ulster, UK, outlined the role and work of the European Food Safety Authority (EFSA) on scientific assessment of claims. Based on Regulation (EC) No. 1924/2006, a general condition of a health claim is that the food in respect of which the claim is made has been shown to have a beneficial physiological effect claimed as established by generally accepted scientific evidence. Dr. Strain showed examples of submitted dossiers and outlined the challenges met in evaluating evidences. Weighing of evidence from pertinent human dietary studies is required to ascertain whether a cause-and-effect relationship has been established between the consumption of the food and the beneficial physiological effect. However, there can be disagreements in the characterization of “generally accepted scientific evidence”. He further highlighted that the positives and drawbacks of EFSA’s work may serve as learning points for the development of regulations and the evaluation of scientific data in other countries.

Front-of-Pack Labeling: Practical Considerations

Dr. Pichet Itkor from the Federation of Thai Industries, Thailand, chaired the second session. The first speaker of the session was Dr. Adam Drewnowski from the University of Washington, United States. In his paper titled Global Approaches and Perspectives on FOP Labeling, Dr. Drewnowski raised a pertinent question in food labeling: will front-of-pack (FOP) labels better convey nutrition information to the consumer than the Nutrition Facts (or Nutrition Information Panel)? Some known limitations of this back-of-pack panel are that consumers find it too complex, and that the information often stresses on nutrients to avoid rather than the total nutrient package. The US FDA identified two FOP approaches used globally: the summary system and the nutrient specific system.

Dr. Drewnowski shared an example of using nutrient profiling via the Nutrient Rich Foods Index approach. When designing or selecting a particular FOP labeling scheme, it is imperative to have science-based nutrient profiling criteria in order to eventually assist consumers in making healthier food choices. Moreover, for the protection of public health, consumer validation must be done to show that consumers understand and will use the labels. Dr. Drewnowski highlighted that an FOP labeling approach needs to address nutrition needs and problems of the target population – in the Southeast Asian context, these could be the dual burden of under- and over-nutrition, food availability, and food affordability.

Dr. Parinyasiri next shared the Thai experience on FOP labeling. In her presentation, Utilizing GDAs: Lessons Learned in Thailand, she detailed the activities that have been launched following the gazettal of GDA labeling regulations. To raise the Thai consumer’s concern over nutrition and to highlight the importance of food and nutrition labeling, educational materials were published and road shows and informative campaigns conducted. Workshops and training programs were organized for snack food producers, government officers, and nutrition educators in Thailand to facilitate the implementation of GDA labeling and for long term consumer education.

Research activities to determine the usage of GDA labeling and to adjust future consumer education campaigns were also done. Preliminary results of a consumer evaluation study found that more than half the Thai population is aware of, understand, and use the information on GDA labeling.

Ms. Sulong shared another country experience in implementing FOP labeling: Approach to FOP Labeling in Malaysia. In recent years, varying FOP labeling formats have been implemented by different manufacturers and retail stores in Malaysia. As there is no standard for FOP labeling and different formats using a variety of terms and references were found to exist, the government and industry worked together to provide a consistent “format” across all foods. Launched as a voluntary scheme, manufacturers who choose to use FOP labeling are encouraged to use an energy icon format that provides information on the amount of calories a particular food product contains and the percent contribution of the food to a standard energy NRV of 2000 kcal. It was emphasized that the use of this energy icon should not be promoted as the only tool in assisting consumers in making food choices, however, it should be used in conjunction with the Nutrition Information Panel. More scientific data on how consumers understand and utilize labeling information are also required to improve food labeling.

Dr. Akrat Suksomcheep from the Food Processing Club, Federation of Thai Industries (FPC-FTI), Thailand, next gave the Industry and Consumer Perspectives on the FOP Solution. In response to the increasing burdens of obesity and non-communicable diseases, FPC-FTI has held dialogues and collaborated with other stakeholders to identify, foster and implement programs that encourage healthy weight and living. The goal of the industry is to improve consumer health through education,
product variety and physical activity. To facilitate this, FPC-FTI is committed to providing factual, meaningful and understandable nutrition information of food products, such as via FOP labeling. Such information, in conjunction with effective consumer education, provides a more sustainable solution in helping consumers to have a balanced diet and to meet individual nutritional needs. However, monitoring and evaluation of labeling schemes are needed to ascertain if they are effective in helping consumers to make informed food choices.

Nutrient Profiling: Science and Applications

Mrs. Darunee Edwards chaired the third session of the seminar. The session started off with Dr. Drewnowski’s presentation on the Public Health Implications of Nutrient Profiling. Globally, consumers are progressively demanding for foods that are tasty, nutrient-rich, affordable, convenient, culturally and socially acceptable, and sustainable. Nutrient profiling can play a role in public health not only by supporting information on FOP labels, but also by identifying foods that meet these demands.

Dr. Drewnowski showed examples of using a nutrient profiling model to calculate a food product’s nutritional content per calorie and per unit cost. The resulting composite score can then be used to separate foods, which are nutrient-rich and affordable, from those which are energy-dense (and nutrient-poor) and less affordable. Similarly, by calculating a food product’s nutritional content per carbon cost, the sustainability of a variety of diets can be determined – this example illustrates possible novel applications of nutrient profiling.

To apply existing nutrient profiling models in the Southeast Asian setting, a collection of local data, such as nutrient composition, population dietary intake, and food prices data is required. Nutrient profiling models can be utilized to identify affordable and widely available nutrient-dense foods in the region to help vulnerable populations.

Dr. Leo Stevenson from Newcastle University, UK, presented his paper on another application of nutrient profiling: Nutrient Analysis and Nutrient Profiling as Tools to Improve the Nutritional Quality of ‘Out of Home’ Foods. Dr. Stevenson’s study investigated the nutrient composition of selected food groups from takeaway outlets in the UK: Chinese, Indian, English, pizzas and kebabs. These foods are usually high in energy, total fat, saturated fat and salt, and are making up an increasing component of the Western diet. Significant variation in the mean nutrient content across meal groups was observed.

The results were used as a basis for a pilot study to improve the nutritional profile of a takeaway meal. Recipe reformulation, alterations to food preparation methods and sensory analysis were done – Dr. Stevenson showed that these tools could successfully reduce the negative impact of takeaway foods on public health. This could be relevant to Southeast Asian countries where takeaway foods form a substantial component of the population’s diet.

The last speaker of the session, Mr. Gerard Vinyes of Nestlé Research Tokyo, Japan, presented on Using Nutrient Profiling for Product Innovation & Renovation: The Nestlé Experience. Mr. Vinyes shared an industry perspective using nutrient profiling systems, specifically in overcoming technical and consumer related barriers during product innovation and renovation (I&R) and the development of healthier food and beverage products. The Nestlé Nutrient Profiling System (NNPS) has been used to guide the product innovation and renovation processes of Nestlé’s food and drink product portfolio. The NNPS is based on four principles of assessment:
1) consideration of a category specific system, 
2) consideration of specific nutritional factors to limit or promote in the diet, 
3) qualifying minimum or maximum thresholds specific to adult or children population, and 
4) assessment of products on a per serving basis as they are consumed.

Mr. Vinyes provided data of the positive results obtained over the years applying NNPS to drive the nutritional profile of food and beverage products, and also gave examples of products with improved nutrient profiles. Reductions in sugar and sodium content and increments in whole-grain, fibre and mineral contents were efficaciously achieved.

Effectively Communicating Nutrition Information

The last session, chaired by Dr. Drewnoski, examined the effectiveness of nutrition labeling and claims in communicating nutrition information and promoting healthful food choices. Ms. Hazel Fowler from Food Standards Australia New Zealand (FSANZ), Australia, presented the paper on Content Claims and Impact on Consumers: A Review. Findings from a FSANZ research study that investigated the influence of nutrition content claims on consumers’ nutrition and health perceptions and purchase intentions were shared. Completed in 2008, the study compared the responses of subjects exposed to packaged food products with and without nutrition content claims, yet found no significant difference in the consumers’ behavior and attitude.

A follow-up literature review found that there is a wide variety of research designs used to examine the effects of nutrition content claims, including self-report surveys, rating experiments, choice experiments and sales data. The results of these studies similarly point towards ambiguity in the effect of nutrient content claims on consumer choices. Ms. Fowler shared the strengths and weaknesses of different research designs, and the mechanisms via which the design of the studies influenced their results.

Dr. Josephine Wills from the European Food Information Council (EUFIC), Belgium, next spoke about European Consumers and Health Claims: Perceptions, Attitudes, Understanding and Purchasing Behavior. Dr. Wills presented recent research done in the EU investigating the influence of health claims on consumer perception and purchase intentions. The studies generally demonstrate inconsistent and equivocal findings apart from consumers’ self-reported generic interest in health claims.

Consumer perceptions were typically found to have associations with certain factors, such as the nature of carrier product and the type of health claims. For example, health claims tend to be perceived more positively when linked to a product with overall positive health image or containing a familiar functional ingredient. A consumer’s personal beliefs and level of nutrition knowledge also may confound the perceived beneficial effect of health claims. As legislation in the European Union requires that nutrition and health claims are understood by the average consumer, this remains a critical area for more investigation.

At the end of the session, a panel discussion summed up the topics discussed throughout the 1½-day. Potential future strategies and crucial research gaps were deliberated and identified by the panel members as well as the floor. The seminar was closed and all speakers and the audience were thanked for their contributions and expertise.
Vitamin D Deficiency in Australia – Should More Vitamin D be Allowed into the Food Supply?

In June 2012, ILSI SEA Region Australasia and the Australian Academy of Science held a one-day seminar in Melbourne, Australia, to raise awareness of the issue of vitamin D deficiency in Australia and New Zealand. The seminar also aimed to highlight the need for the government to consider if more vitamin D should be allowed into the food supply in these two countries, and how this may be achieved through food-based strategies.

The seminar was opened by Prof. Andrew Sinclair, current Chair of the National Committee of Nutrition, Australian Academy of Science and past President of ILSI SEA Region Australasia, who described the roles of the Australian Academy of Science and ILSI, as well as the organizations’ collaborative effort to stage the seminar.

Overview of vitamin D Status in the Australian Population

An overview of the impact of vitamin D deficiency on health was provided by Prof. Caryl Nowson of Deakin University, Australia. She outlined the progression of knowledge regarding vitamin D – from around 1920 when cod liver oil was used for rickets, to the present day where there is Level 1 evidence for vitamin D deficiency relating to falls and fractures with weaker evidence for a relationship to numerous other diseases. We now spend much time indoors and wear clothing in cooler climates, which contribute to low sunlight exposure and hence low vitamin D status. Vitamin D can also be obtained from food, however, this contributes only minor amounts. Prof. Nowson concluded by saying that only a small amount of dietary vitamin D is required to avert deficiency and prevent rickets in infants and young children, as well as osteomalacia in adults. This could be achieved using a variety of fortified foods to reach as many consumers as possible.

Prof. Rob Daly of Deakin University, Australia then spoke about vitamin D status and optimal levels. Previously, optimal vitamin D was identified by a serum level for 25(OH)D above 50 nmol/L, but some experts, including Prof. Daly, now recommend a level above 75 nmol/L. Results from the AusDiab study showed that 73% of Australian adults had levels less than 75 nmol/L. The rates of vitamin D deficiency are similarly high in New Zealand and northern...
Looking at the topic of vitamin D status of migrants and indigenous Australians was Assoc. Prof. Andre Renzaho from Monash University, Australia. Melanin in the skin protects against solar radiation. However, the darker the skin, the more sunlight is needed to produce vitamin D. People from Africa, the Middle East and South Asia show a significant decrease in vitamin D levels after migrating to Australia or Europe. Those who wear clothing that cover the entire body are also at higher risk of vitamin D deficiency. Migrant populations are likely to eat different foods than other Australians, which is an important consideration for vitamin D fortification. Whilst indigenous Australians have higher vitamin D levels than migrants, many have less than optimal levels. Assoc. Prof. Renzaho highlighted that vitamin D status is an urgent issue for both migrant populations and indigenous Australians.

Speaking on the effectiveness of sunlight exposure to maintain adequate levels of vitamin D was Prof. Rebecca Mason from the University of Sydney, Australia. For people with light skin, 5 to 10 minutes of sunlight per day is needed in summer, and 30 to 40 minutes in winter in the southern parts of Australia and New Zealand. However, people with darker skin need 3 to 6 times these amounts of sunlight. Additionally, older people produce less vitamin D from sunlight exposure. Prof. Mason said that there needs to be a balance between skin damage and vitamin D production. Whilst those at high-risk of skin cancer need to avoid the sun, others need to have a balance by practising short but frequent exposure to sunlight.

Impact of Vitamin D Deficiency on Health

Dr. Georgia Paxton of the Royal Children’s Hospital in Melbourne spoke about her experiences in a clinical setting. Around 250 children from the state of Victoria suffer from vitamin D deficiency rickets each year. Vitamin D treatment also helps with severe bone and joint pain. However, there are many gaps in paediatric vitamin D data and until better evidence is obtained, Dr. Paxton recommends 25(OH)D serum levels for children be above 50 nmol/L. Additionally, 25% to 50% of pregnant women have serum vitamin D levels less than 50 nmol/L in southern Australian states, and this increases to 60% to 98% among veiled and/or dark skinned women. Dr. Paxton concluded by saying that vitamin D is a high priority issue for both children and pregnant women.

A more cautious approach to vitamin D food fortification was signaled by Prof. John McGrath from the University of Queensland, Australia, who presented data on the dangers of excess vitamin D. He shared that low pre- and perinatal vitamin D adversely affects brain development and increases risk of schizophrenia. However, those with the highest vitamin D also have increased risk of developing schizophrenia. This U-shaped relationship between vitamin D status and health outcomes is also evident with death from any cause, mother-to-child transmission of HIV, neonatal small-for-gestational age and type 1 diabetes in newborns. While the cause for the U-shape is currently unknown. Prof. McGrath reiterated that until we know the causes for the U-shape curve, there could be adverse impact by adding more vitamin D into the food supply.

Prof. Peter Ebeling from the University of Melbourne, Australia, reported that recent data from the Victorian Health Monitor showed that 4.5% of Victorian adults had a severe deficiency with a serum 25(OH)D level < 12.5 nmol/L, equating to 160,000 people across Victoria. Additionally, dietary vitamin D intake for Victorians is far below recommended levels. Another recent study showed that vitamin D plus calcium supplementation reduced the risk of death by 9%. Vitamin D may also be associated with multiple sclerosis, cancer, cardiovascular disease and type 2 diabetes. Prof. Ebeling postulated that the U-shape issue raised by Prof. McGrath might be due to the situation where patients whose medical conditions are more severe are more likely to be prescribed high dosage vitamin D supplements. Prof. Ebeling concluded that it is important to screen and treat vitamin D deficiency among at-risk groups such as patients with type 2 diabetes and pregnant women.

Should Vitamin D be added to the Food Supply?

Providing a Canadian perspective to the issue of vitamin D food fortification was Prof. Susan Whiting from the University of Saskatchewan, Canada. Mandatory vitamin D fortification of food has been implemented in Canada since 1975. Current mandatory fortified foods include fluid milk and margarine. As in Australia, the dietary intake of vitamin D among the Canadian population is low. Young Canadian children obtained almost all of their dietary vitamin D from dairy products. For older children and adults, dairy products, meat and seafood provide the largest quantities. Prof. Whiting said that Canadians have benefited from vitamin D fortified milk and this has helped to prevent childhood rickets. However, Canadians still need more vitamin D. Additionally, non-dairy fortified foods are needed for the growing non-white population.

If food fortification strategies are used to increase vitamin intakes in Australia, this would entail approvals through the food regulatory system. Ms. Janine Lewis from Food Standards Australia New Zealand explained how the food regulatory system works and summarized the approval process. She estimated that voluntary vitamin D food fortification could take 9 to 12 months for approval and a best case scenario for mandatory fortification could take 2 to 3 years.

Providing perspectives from the food industry were Mr. Greg Seymour from the Australian Mushroom Growers Association, and Mr. Wouter Claerhout from DSM Nutritional Products. Mr. Seymour spoke about the vitamin D content of mushrooms. Indoor grown mushrooms are now being irradiated to provide a substantial dietary source of vitamin D2. This source of vitamin D is bioavailable, shelf stable and cooking stable. Mr. Claerhout added that Vitamin D deficiency is a worldwide problem, affecting with 40% to 75% of the population in both developing and developed countries. European policy makers are starting to take action to tackle this growing problem, but the Asia-Pacific region will be hardest hit, due partly to its rapidly ageing populations. Mr. Claerhout shared some striking examples of the growing awareness of the importance of vitamin D, including a 14-year-old Scottish boy who campaigned for every child in Scotland to receive vitamin D after his mother was diagnosed with multiple sclerosis, and sky-rocketing sales of vitamin D supplements in the US after promotion by television celebrity Ms. Oprah Winfrey.

The seminar concluded with a panel discussion on the primary topic of whether vitamin D should be added to the food supply in Australia and New Zealand. While several of the speakers agreed to the idea of food fortification, a number of speakers also sounded a more cautious note, due to the limited data available on vitamin D and health status of certain population groups.

The interesting data and discussion generated during the seminar garner considerable attention and were widely reported among the Australian media. Vitamin D deficiency is an increasingly important public health concern in the Asia Pacific region. Following up on this seminar, as well as the earlier seminar held in Indonesia in November 2011, ILSI SEA Region will continue to engage stakeholders in addressing this health issue.
ILSI SEA Region Looks into Salt Consumption in the Region

ILSI SEA is currently undertaking a project that takes a closer look at levels of salt consumption and main food sources of salt in the region. Collaborators in this undertaking are the Commonwealth Scientific and Industrial Research Organization (Australia), Philippine Food and Nutrition Research Institute (FNRI), and National University of Singapore (NUS).

Dr. Ada Batcagan-Abueg (MS Public Health, NUS) examined the best available evidence regarding salt intakes in selected Southeast Asian countries (Singapore, Indonesia, Philippines, Malaysia, Thailand, Vietnam) and current salt reduction initiatives in these countries.

The review was presented during ILSI SEA Region’s 2012 Annual Meeting, held in April in Singapore.

Some conclusions from the review included the observation that most studies that estimated sodium consumption indicated that salt intake exceeded the recommended limit of 2 g/day of sodium. The greatest proportion of dietary sodium comes from added salt and sauces. In addition, all the six Southeast Asian countries reviewed have salt reduction initiatives, with greater emphasis on consumer education and less effort on targeting food production and the environment. However, it was also noted that, given the heterogeneity in study design and salt intake assessment methods, caution should be exercised when comparing sodium intake estimates amongst countries.

Another upcoming review by CSIRO will examine salt sensitivity genes in Southeast Asian populations. In addition, FNRI is analysing Philippine food consumption data to examine levels of sodium intake and its main dietary sources in different age and gender groups. Findings from these reviews are expected to provide a clearer understanding of salt and sodium consumption, as well as corresponding health risks, in Southeast Asia. The findings are expected to be available in early 2013.
Announcement

Healthy Aging in Asia
Strategies to Meet Health & Lifestyle Challenges

March 4 - 5, 2013, Grand Copthorne Waterfront, Singapore

Widespread demographic changes are taking place in Asia. Countries within the region are starting to experience a rate of population aging that is faster than that experienced by Western countries. With aging in Asia occurring even more rapidly than economic growth, countries will have less time to prepare, and will have to meet the challenges of an aging population at much lower levels of development than in the West.

As the population ages, chronic diseases will become more prevalent and this will both tax the healthcare systems and increase public health spending. Nutrition and health strategies to prevent disease, as well as programs to promote healthy aging and improved quality of life, will become an urgent priority.

Conference Objectives
The Conference aims to:

1. Present current scientific findings on diet, nutrition, and longevity
2. Discuss the health status of the elderly in selected Asian countries
3. Share international and regional experiences; programs and research on aging; and
4. Identify effective nutrition and health strategies and best practices to promote healthy aging

Program Topics
• Diet, physical activity, stress and longevity
• Macronutrients, micronutrients, and functional foods in aging
• Nutrition, genetics, and chronic diseases
• Nutritional status of the elderly
• Holistic, healthy aging and the community
• Policies and programs to promote healthy aging

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

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

Submit abstracts online at:-
www.ilsi-healthyaging2013.com
For enquiries, please email us at:-
ilsisea@singnet.com.sg

Who Should Attend
Nutrition and health professionals, policy makers and government representatives involved in health promotion, food and nutrition industry professionals, academia and researchers

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