Science InSight

News and Updates on Nutrition, Food Safety and Health

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ILSI SEA Region Celebrates 25 Years
40 years ago, the International Life Sciences Institute (ILSI) led the way in initiating and establishing a unique and neutral platform for scientific dialogues, sharing of knowledge, and building of partnerships among multiple sectors to address scientific topics of mutual interest in the key areas of nutrition, food safety, the environment, and sustainability. This mission has been the cornerstone for all ILSI programs globally, including ILSI Southeast Asia Region (ILSI SEA Region) which was established 25 years ago in 1993. Since then, we have brought leading scientists from academia, industry and governments in the region to work together, by contributing their diverse expertise and upholding ILSI’s guiding principles of partnership, scientific integrity and transparency to solve problems of common concern and improve public health across our populations.

As we celebrate ILSI SEA Region’s 25th anniversary in 2018, it is with pride that we recognise our efforts and achievements in supporting the building of scientific capacity in the region. We have collaborated with regional science and research institutions to identify research needs, fill knowledge gaps, and published findings in peer-reviewed scientific journals. Our scientific engagement and network now include not just leading experts but also early career scientists who aspire to be future leaders in their chosen fields. We are facilitating cutting-edge science with foresight into the technology-led future across Southeast Asia and Australasia.

In this issue of Science InSight, we are pleased to share highlights of our programs that took place across the region over the past six months, including the symposium on Transformation Technologies and Translational Research held on April 23, 2018 in conjunction with the 25th Annual Meeting. This provided a glimpse into the development, challenges, and opportunities in harnessing technological advancements in food and nutritional science, agriculture and food systems, as well as biomedicine for more sustainable public health solutions. A seminar to explore and gain insight into the Drivers of Consumer Food Choices, and a Nutrition Labeling and Claims seminar and workshop addressed communication and regulatory aspects of educating consumers and in providing information to guide consumers’ food purchases and consumption.

Perspectives on the Safety Evaluation and Use of Food Additives and the Safety Assessment of GM Food Crops and New Plant Breeding Technologies were addressed at 3 regional fora with experts from international agencies and regulatory bodies. Topics discussed included the review of scientific data, advances and barriers to enhancing the quality and safety of food products and the agri-food value chain, as well as the challenges arising from the adoption of different protocols and data requirements between different governments. A spectrum of topics relating to healthy aging was the focus of a seminar on Nutrition and Life Course Approaches to Healthy Aging, while the seminar on Gut Microbiota and Impact on Overall Health promoted the understanding of the intestinal microbiome and implication for health and disease at each life stage. These symposia, seminars and workshops were held across Singapore, Malaysia, Thailand, Australia and the Philippines, with participants from Southeast Asian and other Asian countries, Australia, New Zealand, USA and Europe.

In addition, ILSI SEA Region provided support to ASEANFOODS to host a training workshop in Food Composition Database Development in Myanmar that was participated by invited scientists from Cambodia and Laos. We also supported a symposium session on Sustainable Food System and Diets - Implication and Relevance for Nutrition Security at the 5th International Rice Congress held in Singapore. Coming up in November, we will be organizing a seminar and workshop on Maternal Nutrition and Birth Outcomes in Southeast Asia to address the high rate of persistent stunting in some Southeast Asian countries and the growing concern on the incidences of gestational diabetes.

Finally, I would like to thank the many experts, advisors, corporate member representatives and ILSI colleagues from near and far who joined us this April in Singapore. ILSI SEA Region’s achievements, would not have been possible without your generous support, active participation, and invaluable friendships. Your continuing support, collaboration and contribution will be immensely important to ensure ILSI SEA Region’s success and impact for the next 25 years!

Boon Yee Yeong
Executive Director, ILSI SEA Region
In 2018, ILSI SEA Region celebrates its 25th Anniversary. Since its inception in 1993, ILSI SEA Region’s programs and activities have grown and expanded to cover the 10 countries of ASEAN (Association of Southeast Asian Nations), as well as Australia and New Zealand. Through the years, ILSI SEA Region has played a significant role in bringing together the public and private sectors in these regions to address important public health issues through collaboration and partnership.

It has achieved this by providing a neutral and credible forum for international scientists and experts to share their latest research and knowledge with regional audiences. It has also supported scientific research and capacity building, and facilitated the development of strategies and sustainable solutions that aim to improve the health and well-being of populations in the region.

To mark the milestone of its 25th Anniversary, the ILSI SEA Region Annual Meeting held on April 24, 2018 in Singapore included several celebratory activities.

One of ILSI SEA Region’s greatest strengths and achievements is its network of stakeholders who have contributed significant efforts in helping the branch achieve its goals. The Annual Meeting was well-attended by friends and colleagues from ILSI branches, as well as ILSI SEA Regions’ Directors, Scientific Advisors, Members and many representatives from its partners and stakeholders. It was a joyous occasion for long-time colleagues and friends to jointly celebrate their friendships and achievements over the past 25 years.
A Gathering of ILSI Family and Friends

Mr. Geoffry Smith, Mrs. Boon Yee Yeong, Dr. Suzanne Harris, Mr. Howard Delaney

ILSI SEA Region Country Coordinators

Mr. Geoffry Smith, Dr. Diana Banati, Dr. Junshi Chen

Mr. Smith with Dr. Harris

Celebratory Champagne

Mr. Smith and Mrs. Yeong with Mr. and Mrs. Rodolfo Florentino

Mr. Kim Keat Ng

ILSI SEA Region Board of Directors

Mrs. Boon Yee Yeong

Dr. Emorn Udomkesmalee

Dr. E Siong Tee

Dr. Masami Takeuchi

Mr. Geoffry Smith

Dr. Junshi Chen

Mrs. Boon Yee Yeong

ILSI SEA Region and Friends
ILSI SEA Region Has Talent!

An evening reception showcased the many talents of ILSI SEA Region’s staff, colleagues, and friends. Colleagues from the Country Committees and Regional Office shared cultural performances, music and dance, and local delicacies. ILSI SEA Region thanks all colleagues and friends who celebrated the occasion with wonderful music, delicious food, and great camaraderie!
Transformation Technologies and Translational Research

Rapid technological advancements in the areas of biomedicine, agriculture, as well as food and nutritional sciences present exciting potential for positive impact on the overall food system, the environment, human health and disease prevention.

Understanding the development of these technologies and their applications, as well as public acceptance and societal impact in the coming era, will be critical in bringing science to market to provide better and more sustainable public health solutions. Acknowledging this, ILSI SEA Region held a symposium in Singapore on April 23, 2018, titled ‘Transformation Technologies and Translational Research: A New Era in Sustainable Food System and Public Health Solutions’, in collaboration with A*Star, Singapore and CSIRO, Australia. This symposium was held in conjunction with its Annual Meeting and other events to celebrate ILSI SEA Region’s 25th Anniversary.

Dr. Ralph Graichen from the Agency for Science, Technology and Research (A*STAR), Singapore, opened the symposium with his keynote presentation ‘Smart Data and Food Innovation: Potential for Public Health Solutions’. Smart data, also known as “big data” offer increased opportunities in better decision making, helping to uncover underlying trends ranging from consumer insights, to operational issues, to innovation. Correlations and relationships are emerging that would typically not be available in one dimensional, unstructured data sets. Smart data are now seen as a driver of growth and innovation, and are used to screen for new functionalities and novel features.

However, Dr. Graichen highlighted that while potential applications and benefits are plentiful, a multitude of issues need to be addressed before being able to capture its full potential. Everything from data policies, collection and access, management, and infrastructure needs to be addressed in the context of privacy, security, liability, and intellectual property.

An Evolutionary Perspective on Nutritional and Human Health: From Reductionism to Systems Approaches was presented by Prof. Richard Head, University of South Australia, during the keynote session. Prof. Head said that historically, humans have demonstrated remarkable inventive skills
in and around the fundamentals of sustenance, mobility, shelter, and communication. Across areas of science and engineering, success has been the ability to achieve scale and concurrently to derive personalisation from complexity with sophistication.

In the nutritional sciences, we see an evolution of scientific method with a similar emerging pattern. In nutrition, the molecular characterisation of the single bioactive and the demonstration of efficacy has been a fundamental contributor to our knowledge and wellbeing. The emergence of an understanding of the pleiotropic properties of many nutrients, their potential influence on, and with, the genome, epigenome, transcriptome, proteome, metabolome, and microbiome, together with dietary behaviour and lifestyle, has stimulated Complex Systems thinking in this area. Prof. Head noted that challenges ahead will involve further evolution of the scientific method to meet an individual need for personalisation, clarity, and convenience from this scale and complexity, with the appropriate level of sophistication.

**Transformation Technologies in Food Systems**

Convergence is gaining popularity as a new approach to address complex cross-disciplinary problems in health. Often defined as the integration of the life sciences, physical sciences, mathematics, engineering, and information technology, convergence (research or science) has emerged as a strategic, cost-effective, and efficient way to develop potential medical, technological, manufacturing and processing breakthroughs.

Dr. Chor San Khoo, ILSI North America, noted in her presentation ‘Technology Innovation: Trends that are Reshaping Life Sciences and Health’ that this convergence approach has led to the proliferation of a new field of ‘biologically-inspired engineering’ which is accelerating development of novel and precise technology and tools for exploring biological systems and mechanisms. The integration of big data, artificial intelligence, computational sciences, sensor advancement, systems biology, cellular genomics, and nano- and material technologies has opened new doors for combination technologies targeted to customized applications. Dr. Khoo shared her view that novel tools and technologies emerging from bio-inspired research and combination technological breakthroughs need to be explored for applications in the food and nutrition fields.

Today, we face the challenge of how to sustainably feed the global population that is projected to increase to nearly 10 billion people by 2030. We are also seeing a growing demand from consumers across countries for foods with demonstrated health benefits. In combination, these trends create the opportunity for a tailored sustainable dietary approach as part of a proactive and precise health framework that aims to keep individuals healthy for as long as possible. Dr. Chris Downs, CSIRO Agriculture and Food, Australia said that plant-based foods are likely to be both sustainable and healthy due to the presence of plant constituents (both naturally occurring and from enhanced breeding programs) associated with decreasing the risk of chronic diseases. He provided an overview of CSIRO’s new developments in elite grains and other crops, including innovative processing technologies which can further modify nutritional profiles and physical functionality of new and existing grains.

Prof. Lynne Cobiac, CSIRO Health and Biosecurity, Australia, discussed how an inadequate / inappropriate diet is a major risk factor contributing to the burden of chronic diseases and a major determinant of the health of our gut microbiome. When planning for producing food in the future, all these factors need to be integrated into one trans-disciplinary framework including industry, government, and research partnerships. CSIRO’s newly announced Precision Health Future Science Platform is one such approach.

Southeast Asia is an important source of some of the world’s key agrifood produce. However, the region also faces substantial challenges in food insecurity due to rapid urbanisation and the loss of productive cropland, severe weather events, and climate change. Prof. Paul Teng, NIE International, Singapore, noted that against this backdrop, sustaining agrifood systems in ASEAN will depend on increasing current agricultural productive...
capacity with natural resource conservation, in consonance with population growth and changing diet demands. He concluded that these challenges require that investments in science and technology, backed by infrastructure and human resources be made. The region also needs a pragmatic approach to formulate evidence-based, supportive policy and regulations.

Ms. Zelda Anthony, IBM Singapore, shared on Blockchain and its Application in the Food Supply Chain. She noted that the global food supply chain continues to experience systemic inefficiencies, leading to difficulties in preventing and tracking problems such as food fraud, foodborne illnesses and food waste. Blockchain provides a solution to the problem of monitoring asset ownership and the large magnitude of transfers within the food supply chain as a shared, replicated, permissioned ledger. It also brings together multiple parties on an up-to-date, trusted network. Ms. Anthony reviewed the key concepts behind Blockchain, providing real world examples of where Blockchain is being applied today with the aim of providing significant benefits to end consumers and to all participants in the food supply chain.

Translational Science and Human Health
Nutrition and health have taken centre stage in our lives. In response, food manufacturers have evolved several strategies to develop foods with specific health benefits and by harnessing emerging technologies to develop foods with functional attributes. These strategies, outlined by Professor Christiani Jeya Henry, Clinical Nutrition Research Centre, A*STAR/NUHS, Singapore, include innovative food processing technologies, isolation of novel food ingredients from plants, and development of new food ingredients. Prof. Henry pointed out that disruptive food technology will impact significantly on human nutrition. Such technology will enable us to manipulate the structure of food in order to develop foods with novel health benefits. Combining the nutrient profile of an individual with food selections in the supermarket aisle will also enable all individuals to consume foods that are specifically tailored for their overall health and well-being.

Prof. Barry Halliwell, National University of Singapore, presented on the latest advances in antioxidant research. He noted that unfortunately, clinical trials have shown, with some exceptions, a general lack of effectiveness of supplements of ‘classical’ antioxidants such as ascorbate, vitamin E and B-carotene, in decreasing risk or severity of human disease. There are multiple reasons for this, one being that these antioxidants are often ineffective in decreasing levels of oxidative damage in humans. Prof. Halliwell discussed strategies to minimize oxidative damage in the human...
body, with much of his research now focused on ergothioneine, a diet-derived antioxidant that is avidly retained by the human body and particularly accumulated at sites of tissue injury, where it may help to diminish tissue damage. He has conducted a detailed study of how ergothioneine, made by fungi and some bacteria, behaves when administered to humans or mice, presenting data on the potential relevance of ergothioneine to human neurodegenerative diseases and other conditions.

The 21st century is an exciting time for biomedical scientists and bioengineers. In recent years, we have witnessed the rapid development of powerful genome engineering technologies, in particular CRISPR (clustered regularly interspaced short palindromic repeats)-Cas systems. While sequencing allows us to read the genome, CRISPR-Cas empowers us to write and redesign the underlying DNA. Professor Meng How Tan, Genome Institute of Singapore, discussed the development and applications of CRISPR-Cas systems as novel tools for sculpting the complex genomes of plants and animals, including humans. He outlined the challenges that the technology is currently facing, describing some solutions to solve these current problems, and sharing thoughts on how the agriculture and healthcare industries may be disrupted in the future.

**Transformation Technologies in Food Safety**

Food safety is a global concern, and newly emerging tools that can be useful in managing such problems have become increasingly sophisticated. However, challenges remain in outbreak investigations that seek to link illness to particular foods and to ensure the appropriate products are recalled. Dr. Masami Takeuchi, FAO Regional Office for Asia Pacific, highlighted genome sequencing as a tool that offers great potential for various food safety regulatory activities including food inspection, outbreak detection/investigation and studies on antimicrobial resistance. However, while several industrialized countries have been moving forward with genome sequencing for food safety management, its application, particularly in developing and transitional countries is limited.

Overcoming these challenges and ensuring that countries can reap the benefits of genome sequencing technology means that all parties need to be involved in the dialogue regarding its use in food safety management. FAO has developed a technical paper on the application of Whole Genome Sequencing in food safety management and convened a global meeting bringing together 175 participants from 50 countries. Dr. Takeuchi said that FAO continues to contribute to address the needs and concerns that developing countries may face regarding the technology.

In the final presentation, Dr. Sebastian Maurer-Stroh, A*STAR Bioinformatics Institute, Singapore, provided an overview of novel computational approaches for assessing the allergenic potential of proteins for the food industry. He noted that food allergies caused by proteins are globally on the rise, while novel or alternative protein sources entering the market need to be tested for safety. Previous FAO/WHO guidelines for computational assessment of allergenic potential of proteins based on single hexamer peptide hits and linear sequence window identity thresholds produced a large number of false positives. Dr. Maurer-Stroh and his team have revisited the sequence and 3D structure features of known allergens in order to derive and test enhanced prediction methods. He pointed out that testing for allergenic potential of proteins using this novel computational workflow early in food production planning and product development can dramatically reduce costs and risks for food companies.

**Panel Discussion and Conclusion**

The symposium concluded with a panel discussion highlighting the importance of multi-stakeholder partnerships in the development and application of new technologies in the food system. Panellists discussed both the benefits and challenges of multi-stakeholder partnerships in the implementation of new technologies in the areas of agriculture, food safety, nutritional and biomedical science. They also highlighted strategies that could be used to ensure effective communication to the public and other stakeholders on the use and safety of new technologies.
Understanding the Drivers of Consumer Food Choices

Understanding how consumers make food choices, and why they like what they choose to eat, is of central importance to nutritionists and other healthcare professionals, researchers, policy makers and the food industry. A better insight into the main determinants of food choice enables the development of policies and interventions that promote healthier eating patterns. In addition, an in-depth understanding of drivers of food choice is essential in the development of products and services that adequately meet consumer needs.

ILSI SEA Region, in collaboration with the Food Science and Technology Association of Thailand (FoSTAT), organized a 1.5-day seminar in Bangkok on March 13-14, 2018, to provide insights into the drivers of consumer food choices. Approaches and methodologies used in the study of consumer food choice were presented. The seminar also provided a platform for discussing ways to improve consumer food choice through a multi-stakeholder approach.

Driving Healthy Food Choices through Public-Private Partnerships

In this keynote presentation, Prof. Visith Chavasit, Institute of Nutrition, Mahidol University, Thailand, noted that during the past half century, under-nutrition has been reduced in many parts of the world. However, many countries are now facing rising levels of overweight, obesity and non-communicable diseases (NCDs) among their populations. Imbalanced diet and lifestyle changes are the main causes of NCDs, and this problem cannot be solved by the public sector alone. Prof. Chavasit said that effective nutrition education and communication could help to reduce the incidence of NCDs. He concluded that collaboration between public and private sectors based on trust, respect and sincerity can jointly drive these programs in a more sustainable way.

Impact of Socioeconomic Status on Food Choices

Prof. Adam Drewnowski, University of Washington, USA shared that taste, cost, convenience, health, and dietary variety are the main drivers of food choice. In general, diet quality depends on education, income, and increasingly place of residence. Diet quality can depend on where people live and where they shop for food, how often, and for how much. New studies in public health nutrition have integrated geography and economics into nutrition science. As a result, disparities in food purchases and diet quality across neighbourhoods can be shown. Prof. Drewnowski said that methods developed in these U.S.-based studies can be applied to Southeast Asia and worldwide.

Understanding Consumer Food Choices

Prof. Mike Reid, RMIT University, Australia, discussed Methodologies for Studies on Consumer Food Choices. Understanding consumer food choices and the factors that influence choice and decision-making is challenging. Consumers often act in unexpected, often emotional
rather than rational ways. Many contextual, personal, and emotional factors influence choice; hunger, appetite, income, skills and knowledge, time and convenience, family, beliefs and motives, to name but a few. The methods used need to balance traditional and innovative approaches and need to help make sense of those consumers being targeted. Prof. Reid discussed the challenges associated with understanding consumers and the food choices they make, considering the methods researchers use to do this and drawing on some of the research his team has undertaken.

Cross-cultural sensory and consumer research (SCR) has been common practice among multinational companies and academia, and involves complex interactions between consumer, situation, culture and product. Dr. Kannapon Lopetcharat, Nouveau Centric Co. Ltd., Thailand, introduced three major research goals of cross-cultural SCR, namely understanding a cultural phenomenon within a specific cultural group; investigating cultural effects on sensory perception and preferences using universal stimuli; and testing the extent of fitness and differences in response styles to research methods across cultures.

Dr. Lopetcharat highlighted that directions that needed to be considered for future cross-cultural SCR include the culture-as-situated cognition (CSC) theory and product testing, and the impact of the internet on research. The CSC theory acknowledges the notion of a dynamic culture that will influence the way consumers make choices and behave. The rise of the internet impacts on how research is conducted and the structure of the culture itself, with the formation of unique ‘digital cultures’ beyond geographical boundaries.

Dr. Bobby Cheon, Clinical Nutrition Research Centre / Nanyang Technological University, Singapore, discussed Influences of Implicit Beliefs about Satiety on Consumer Food Choices and Eating Behaviour. Dr. Cheon explored the role of two types of implicit belief systems in guiding consumer food choices and eating behaviours in the Asian context. The first belief system corresponds to consumers’ implicit meanings and goals associated with satiety and hunger. The second belief system focuses on assumptions that unhealthy and indulgent behaviour can be readily offset or negated by engaging in healthy activities. Across multiple studies conducted in Singapore, Dr. Cheon’s research demonstrates that implicit beliefs and assumptions about the nature of appetite and eating may have powerful effects on consumer preferences and eating behaviours. Potential applications of these insights to promoting healthier eating habits by changing consumers’ implicit beliefs was discussed.

Prof. Ujang Sumarwan, Bogor Agricultural University, Indonesia, presented Analyses of Indonesian Food Consumption: Differences of Rural and Urban Consumers’ Food Choices between 2017 and 2007. The objectives of the study were to examine Indonesian consumers’ food consumption patterns between 2007 and 2017, and to examine differences in food consumption between rural and urban consumers. It was found that during this time period, there has been a notable change in consumer food choices. Both urban and rural consumers consumed more preprepared food and beverages in 2017 compared to 2007. Calorie intake from preprepared food and beverages increased, while calorie intake from food prepared at home decreased. This data indicated that increasingly time-poor consumers are spending less time cooking at home and more time eating outside home as well as buying more preprepared food and beverages. Some factors contributing to higher consumption of preprepared food and beverages include their convenience, affordable price, and increasing availability in minimarkets in both rural and urban areas.

Food Innovation and Renovation
Food Innovation and Its Challenges was discussed by Prof. Pavinee Chinachoti, FoSTAT, Thailand. Food research in the private and public sectors is facing the need to ensure delivery of safe and quality food products while using smart technologies and sustaining the environment. With rapidly changing consumer dynamics, new lifestyles, information technology and social media, Prof. Chinachoti emphasized that the food industry in Asia must innovate. This can be achieved by seizing an open innovation opportunity, or out-sourcing, or buying external technologies. She also said that human resources to build a technically-skilled workforce is needed for longer-term business growth. The challenge will be to build the required infrastructure and integrate R&D as a pillar of future business growth.
Mr. Garick Kea, The Nielsen Company, Singapore, highlighted global health and wellness trends that have translated to a move into healthy eating in his presentation Consumer’s Perception and Acceptance of Healthier Food Products in Southeast Asia. Mr. Kea analysed in detail how sophisticated consumers are developing an increased interest in dietary choices that promote health benefits, and addressed the impact of healthy eating trends on retail sales for healthier food categories across Southeast Asian markets. He also explored the effectiveness of health claims in helping consumers make informed food choices.

Mrs. Susan Kevork, Nestlé R&D Centre, Singapore, in her presentation Nutrient Profiling for Product Innovation and Reformulation, outlined a science-driven system that Nestlé has used since 2004 to make products more nutritious. The system drives product innovation and reformulation per product category and on a per serving basis and the methodology behind the system is continuously evaluated to adhere to evolving scientific knowledge changes in nutrition, public health regulations, and improvements in food technology.

Communicating with Consumers
Mr. Araya Rojjanawanicharkorn, Food and Drug Administration (FDA), Thailand, discussed Nutrition Communication through Labelling. Mr. Rojjanawanicharkorn shared that nutrition information on food labels in Thailand is presented in 3 formats - Nutrition Information Panel, Guideline Daily Amounts, and Healthier Choice Symbol. The Healthier Choice Symbol helps consumers to easily select healthier food and beverage options. The communication strategy surrounding the symbol is primarily online, through viral clips, infographics, motion graphics and influencers providing consumer-friendly content. ‘Health Volunteers’ employed by the Ministry of Public Health and ‘Young FDA’ managed by Thai FDA also provide education and encourages the use of nutrition information in food labelling. Mr. Rojjanawanicharkorn noted that significant support from industry is needed to develop healthier products and to extend the products’ brand equity through visible programs.

Food choices can be defined as a consumer’s decision based on their knowledge, experience, habits, tradition, culture, socioeconomics and other determinants, noted Dr. Kai Zhong, China Food Information Center, China in his presentation From Communication to Choice. There are several considerations in influencing consumer food choices through communication. Firstly, nutrition communication is not as simple as providing a piece of advice or recommendation. While consumers may be told what healthier food choices are, they may not necessarily follow this advice. Secondly, food choice is an informed decision, therefore identifying and providing any missing information can encourage consumers to make a more informed decision. Thirdly, there are many controversial negative messages and misperceptions surrounding certain foods and beverages circulating throughout social media. Several strategies are required to address these issues. Social media monitoring is critical to keep up with consumer concerns, and a rapid proactive response, using short, positive or encouraging messaging, tailored to different audiences will help to rebuild trust with consumers.

Dr. Kom Kamonpatana, Unilever Thai Services Ltd., Thailand, concluded the presentations with his discussion on the Industry’s Efforts in Communicating and Educating Consumers.

Roundtable and Panel Discussion
Finally, a roundtable and panel discussion on Improving Consumer Food Choices through a Multi-Stakeholder Approach: Issues and Challenges concluded the seminar. Participants discussed key concerns and issues regarding the drivers of consumer food choices; how a multi-stakeholder approach can help to improve consumer food choices; and what kind of communication strategies can be used by different stakeholders to ensure effective communication resulting in healthier consumer food choices, including nutrition labels and claims, social media vs digital media, commercials, advertisements and events.
Updates on Nutrition Labeling and Claims in Southeast Asia

Nutrition labels, as well as nutrition and health claims, are important tools to communicate the nutritional quality and health benefits of a food product to consumers. They provide point-of-sale information and help consumers make informed choices. In Southeast Asia, there is wide disparity between label formats and permitted claims among countries, causing confusion among consumers, and resulting in trade barriers for food manufacturers and distributors.

On August 28-29, 2018, ILSI SEA Region and the ILSI SEA Region Malaysia Country Committee organized the 10th edition of ILSI SEA Region’s series of seminars on Nutrition Labeling, Claims and Communication Strategies. Held in Kuala Lumpur, Malaysia, the 1.5-day seminar was co-organized with the Nutrition Society of Malaysia, and in collaboration with the Food Safety and Quality Division (FSQD), Ministry of Health, Malaysia. The seminar aimed to provide an update on regional developments and regulatory changes in nutrition labeling, nutrition and health claims, and related issues in Southeast Asia and other regions.

Ms. Boon Yee Yeong, Executive Director, ILSI SEA Region, Dr. E-Siong Tee, Nutrition Society of Malaysia and Ms. Norrani Eksan, Food Safety and Quality Division, Ministry of Health, Malaysia welcomed the participants and opened the seminar.

Regulatory Updates from Southeast Asia

Brunei
Ms. Siti Munawwarah Awang Tarif, Ministry of Health, Brunei updated that in 2017 the country has introduced a Healthier Choice Logo Symbol, accompanied by a set of guidelines and nutrient criteria of foods and beverages for local and international food industries and manufacturers. Brunei has also developed new guidelines for 18 food categories on the advertisement of food and beverages to children.

Lao PDR
Ms. Viengxay Vansilalom, Ministry of Health, Lao PDR shared that the "Regulation on Safe Food Processing, Imported-Exported Food No 586/MOH 2006", "Food Labeling No 519/MOH2009" and "Food Registration Regulation" are currently under revision. On the other hand, the draft on "Decree on the Infant Formula and Follow-up Formula Control" and "Regulation on Food Safety and Nutrition Control in Schools" are being finalized. Lao PDR plans to revise the Food Labeling Regulation according to the Revision of Codex Guidelines and develop nutrition labeling in future.

Malaysia
Ms. Norrani Eksan, Ministry of Health, Malaysia highlighted that Vitamin K1, Vitamin K2 and Epigallocatechin Gallate (EGCG) have been gazetted under permitted added nutrient list in...
Table I, Twelfth Schedule. The Food Safety Quality Division (FSQD) has also proposed amendments to the existing nutrition labeling regulations which include conditions for added nutrient claims, "no added sugars" and "no added salt" claims, new content claims and conditions, definition and condition of 'Other Function Claims', expansion of nutrient reference value (NRV) list and nutrients requiring mandatory nutrition labeling.

**Myanmar**
Dr. Ohnmar Soe Win, Food and Drug Administration, Myanmar reported on several updates which included the submission of a new Food Law approval in 2015, commencement of Myanmar Automated Cargo Clearance System (MACCS) since 2016, removal of the requirement of import recommendation and import health certificate for low risk food items in 2017 as well as export recommendation for local food products with existing food production FDA certification in early 2018. In future, Myanmar plans to replace the manual import recommendation to import online notification.

**Singapore**
Ms. Yi Ling Tan, Agri-Food and Veterinary Authority (AVA), Singapore updated that AVA has increased the number of approved health claims after a proactive review with the Advisory Committee. They have also extended the health claim on blood cholesterol lowering effect to oat beta-glucan, in addition to barley beta-glucan. She shared that the future programs in the pipeline include encouraging industry to formulate products with lower sugar and conducting a review of trans fat in food in response to WHO’s recommendation to eliminate artificial trans-fat by 2023.

**Thailand**
Ms. Jiraratana Thesasilpa, Food and Drug Administration, Thailand, shared that the amended Recommended Dietary Intake (RDI) of Sodium as well as the extension of Nutrition Labelling and Guideline Daily Amount (GDA) Labeling will be gazetted after the approval by Minister of Public Health. She elaborated that a simplified front-of-pack labeling, "Healthier Choice" logo, accompanied with a set of nutrient profile criteria were being developed for selected product categories.

**Vietnam**
Mrs. Hoang Thi Thanh Nhan, Vietnam Food Administration, Vietnam, highlighted that their future plan is to gain consumer awareness via mass media and promote information exchange between food producers, industrial designers and regulators as well as harmonize regulations and standards for nutrient content labeling.

**Updates from India**
Dr. A.C. Mishra, Food Safety and Standards Authority of India (FSSAI), India provided an update on the Status of Nutrition Labeling and Claims Regulation in India. In recent years, FSSAI has launched various initiatives to achieve its objectives, such as reducing fat, salt and sugar in foods, raising awareness and implementation of food safety practices, training and capacity building. To achieve consistency and transparency in food safety inspection and sampling, FSSAI also launched a nation-wide online platform. Dr. Mishra shared that Food Safety and Standards (Packaging and Labeling) Regulations 2011 has been revised and has been segregated into three different approved food safety and standards regulations, namely, Advertising and Claims Regulations, Labeling and Display Regulations, and Packaging Regulations.

**Codex Guidelines**
The Codex Guidelines on Nutrition Labeling and Claims and Recent Developments was presented by Dr. E-Siong Tee. He provided an overview of Codex Alimentarius guidelines on nutrition labeling and claims, and elaborated on recent developments in two Codex committees - namely, the Codex Committee on Food Labeling (CCFL) and Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU), in the area of nutrition labeling and claims. Dr. Tee highlighted the importance for countries to adopt the Codex guidelines to achieve harmonization of nutrition labeling regulations. He further shared that Malaysia has been tasked by ASEAN Consultative Committee on Standards and Quality (ACCSQ)'s Prepared Foodstuff Product Working Group (PFPWG) to lead a survey on nutrition labeling regulations in the region, and that ILSI SEA Region will contribute to this initiative by sharing key survey findings and outcomes from this seminar and the subsequent workshop with the PFPWG members. Dr. Tee expressed his positive view that the information will be further discussed at future PFPWG meetings, thereby taking a step closer towards harmonization of nutrition labeling regulations in the region.

**Front-of-Pack Labeling: Recent Developments**
Ms. Fatimah Sulong, Ministry of Health, Malaysia shared on the Development of Front-of-Pack...
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Features

(FOP) Labeling Schemes in Malaysia – Energy Icon and Healthier Choice Logo. Food labeling, including simplified nutrition labeling, has been identified as an important tool to help reduce the global issue of increasing incidence of obesity and chronic non-communicable diseases (NCDs). In Malaysia, FOP energy icon was launched in 2012 and describes the number of calories contained in certain food and beverages products. The Healthier Choice Logo (HCL), launched in 2017, is part of the strategy to assist consumers in adopting healthy dietary practices by making wise food choices at the point of purchase, as well as to encourage food industries to produce healthier food options to be available in the market. Ms. Fatimah added that any nutrition labeling system needs to be accompanied by awareness and education programmes targeted. It is important that all stakeholders should play a more prominent role in ensuring that consumers utilize nutrition information on food labels.

Mr. Araya Rojjanawanicharkorn, Food and Drug Administration (FDA), Thailand, discussed Communicating Nutrition through FOP in Thailand. He shared that nutrition information on food labels in Thailand is presented in 3 formats - Nutrition Information Panel (NIP); Guideline Daily Amounts (GDA), and Healthier Choice Symbol. In 2014, Thailand implemented a front-of-pack label, the Healthier Choice Symbol which helps consumers to easily select healthier food and beverage options. The communication strategy surrounding the symbol is primarily online, through viral clips, infographics, motion graphics and influencers providing consumer-friendly content through online channels. Mr. Rojjanawanicharkorn shared a video developed as an initiative to promote the use of the “FoodChoice” application, an educational tool to provide nutrition information on labels via barcode scan. He also emphasized the importance of collaboration and communication among all key stakeholders and providing effective nutrition information to consumers.

Mrs. Susan Kevork, Nestlé R&D Center, Singapore provided a background on Nutrient Profiling for Labeling and Other Uses. She illustrated various examples on the applications of nutrient profiling and highlighted that purpose, target population and context must be taken into consideration when using nutrient profiling. She introduced the Nestlé Nutritional Profiling System which helps translates public health recommendation into product targets for reformulation to progressively drive Nestlé’s commitment to offer healthier choices.

Effective Consumer Communication

Two research studies on Unintended Consequences of ‘Healthy’ Food Labels: Promoting Health or Licensing Indulgence was shared by Dr. Bobby Cheon, Clinical Nutrition Research Centre / Nanyang Technological University, Singapore. He revealed that a tendency towards restrained eating was associated with stronger responses to health-related portrayals of the anticipated meals. The research studies also showed that how a food is labeled as ‘healthy’ may have unseen consequences on consumers’ selection and intake of other foods. For instance, a food labeled as low in calories may be more likely to promote compensatory indulgence, while a food labeled as having healthy properties may act as reminders of health goals that inhibit indulgence.

Dr. Junhua Han, China National Centre for Food Safety Risk Assessment, China, presented the Impact of Nutrition Labels and Claims on Consumers’ Food Choices: The China Story. She shared various national initiatives to educate consumers on nutrition labeling. A survey was also conducted to understand the comprehension and use of nutrition labels among residents in different areas. Dr. Han noted that the draft of the revised national standard for food nutrition labeling by the China National Health and Family Planning Commission (NHFPC), which will include the proposed key nutrients to be listed on the label, is expected to be completed by end of 2018.

In his presentation on Efforts in Communicating and Educating Consumers Using Labels, Dr. Young-Jun Kim, Seoul National University of Science and Technology, Korea, noted that one of the major amendments made this year in Korea was the change of nutrition facts table and RDI in processed food to reflect the current eating habits of Koreans. He further elaborated on the mandatory and voluntary nutrition labeling in restaurants and food services selling children’s favorite foods. He also noted that considerable efforts have also been made by various food companies in reducing sodium and sugar content in processed products.

Dr. Iain Brownlee, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia discussed the Issues on the Definition of Whole Grains and Dietary Fiber: Towards Harmonization in Southeast Asia. He raised...
several issues including the lack of global and regional definition for whole grain food and varying recommendations for its intake. Hence, further steps should be taken to harmonize these two areas. Dr. Brownlee shared a public-private partnership in Denmark which almost doubled national intake of whole grains over a six-year period. Citing the low intake of whole grains in Southeast Asia, Dr. Brownlee suggested that this could serve as one of the rational approaches for countries in the region to follow.

**Substantiation and Harmonization**

Dr. Dorothy Mackerras, Food Standards Australia New Zealand (FSANZ), Australia presented on Building Scientific Evidence to Support Nutrition & Health Claims: What’s Next? She shared that variations in regulations such as whether food includes or excludes products such as vitamin and mineral supplements and language used to describe sub-types of claims could affect how the nutrient profiling and substantiation are implemented. For substantiation of nutrition and health claims, Dr. Mackerras suggested national bodies need to decide what degree of certainty in a food-health relationship is sufficient to allow a claim to be made. In Australia and New Zealand, a systematic review which demonstrates a causal relationship is required to underpin a health claim on a food label.

For the presentation on Health Claims in Japan – What Scientific Evidence Are We Looking For, Mr. Hiroaki Hamano, International Consultant on Food Regulations, Algolynx Inc., Japan, highlighted that a new category called “Food with Function Claims (FFC)” was introduced by the Consumer Affairs Agency (CAA) in 2015. This was in addition to the existing 2 categories: Foods for Specified Health Uses (FOSHU) and Foods with Nutrient Function Claims (FNFC). This new category enables food business operators to make function claims not only on processed or prepackaged foods including presumed ‘dietary supplements’ but also on fresh produce. Mr. Hamano further elaborated on the requirements for the substantiation of FFC such as the types of methods used to evaluate the safety and effectiveness of the product.

The final presentation, Harmonization on Nutrition Labeling, Nutrition and Health Claims: Efforts and Updates in SEA was given by Ms. Pauline Chan, ILSI SEA Region, Singapore. She explained that there is a lack of harmonization in nutrition labeling and claims regulation among the ASEAN countries, illustrating several examples such as the difference in the number and types of nutrients to be declared on nutrition information panels (NIP) and the types of health claims permitted. Ms. Chan shared her view that harmonizing nutrition labeling and claims regulations could help to improve consumer understanding of key messages on food labels, as well as promote a reduction of technical barriers to the commercial distribution of foods and beverages in the region.

Ms. Chan shared that at the 9th Workshop on Nutrition Labeling and Claims organized by ILSI SEA Region and held in Manila, Philippines in 2015, seven priority areas of NIP were identified for potential harmonization within ASEAN, and follow up discussion on these seven areas were continued in 2016 in Hanoi, Vietnam at the Nutrition Labeling and Claims Workshop. The key outcomes of the workshops were shared with PFPWG. Ms. Chan emphasized that ILSI SEA Region will continue to provide a platform to assist PFPWG and ASEAN regulators in regulatory updates on nutrition labeling and claims, and to facilitate continuing discussions on harmonization.

**Panel Discussion and Conclusion**

The seminar concluded with a panel discussion, with the panelists highlighting various benefits of harmonization of nutrition labeling and claims. It was recognized that clear and standardized nutrition information will facilitate better understanding and interpretation by consumers when making food choices. Supporting the development of technical infrastructure and capacity building, as well as facilitating active engagement by the various countries, could be key areas that ILSI SEA Region can contribute to in the harmonization process.

Finally, the panel hoped that regulators from ASEAN member states could provide full support and commitment to the harmonization of nutrition labeling and claims. While there are inevitable challenges to overcome, the panel expressed optimism in achieving regional harmonization, and look forward to the development of a guideline for nutrition labeling and claims in the near future.
Safety Evaluation and Use of Food Additives

Nowadays, consumers increasingly demand food supply that is flavorful, nutritious, safe, convenient, attractive and affordable. As a result, the food additives market is growing unprecedentedly. However, different countries have differing approaches, protocols and data requirements for new applications of food additives. Therefore, sharing of information, experience and perspectives on current issues is essential to help all stakeholders involved in the safety evaluation of food additives.

A full day seminar on Food Additives: A Global Perspective on Safety Evaluation and Use was organized by United States Department of Agriculture (USDA), ILSI SEA Region and ILSI SEA Region Philippines Country Committee, in collaboration with Philippines Food and Drug Administration on July 23, 2018, in Manila, Philippines.

Food Additives: Safety Assessment Approach and Regulatory Status

Prof. Purwiyatno Hariyadi, Vice Chair of Codex Alimentarius, provided an overview of current issues of food additives from the perspective of the Codex Committee. Codex Alimentarius Committee (CAC) is responsible for developing international food standards, guidelines, and codes of practices to protect the health of consumers and ensure fair practices in the food trade. Prof. Hariyadi emphasized that risk analysis is the foundation of Codex’s work on food safety, and all the standards, guidelines, and recommendations made by the Codex Committee on Food Additives (CCFA) are based on scientific analysis and evidence in reviewing the safety evaluation of food additives.

Under the framework of risk analysis for food additives, the joint FAO/WHO Expert Committee on Food Additives (JECFA) plays an important role as the risk assessor, while CCFA is responsible for international risk management. Currently, CCFA is working on a review of the food additives provisions of General Standard for Food Additives (GSFA), alignment of the food additives provisions of commodity standards, revision of the International Numbering for Food Additives, and development of a priority list for evaluation by JECFA.

Dr. LaShonda Cureton, Office of Food Additives Safety (OFAS), Food and Drug Administration, US, delivered her presentation entitled Codex Committee on Food Additives: U. S. Perspectives. The general principles of the GSFA are to protect consumers and ensure fair practices in food trade. In the food additives requirements, CCFA establishes the acceptable maximum levels for food additives (GSFA), commodity committees (Endorsement and Alignment); prepares priority lists of food additives for risk assessment by the JECFA; assigns functional classes to food additives (International Numbering System- (INS)); recommend specifications for identity and purity for food additives for adoption by the CAC; and elaborates standards for related subjects like labelling of food additives.

Dr. Cureton also described the role of JECFA in the safety evaluation and use of food additives, including reviewing the toxicology studies and the Acceptable Dietary Intake (ADI). At the end of her presentation,
she highlighted the new works established by CCFA.

The third presenter, Ms. Christmasita Oblepias from FDA Philippines presented the Regulatory Status of Food Additives in the Philippines. She shared that the Philippines FDA adopts the principles of Codex and the proposed or permitted level of use of the food additives are adopted as recommended by JECFA. The permitted food additives for specific food products are listed in the Philippine National Standard. However, if a particular food additive is not listed in the national standard, Philippine FDA may review the safety and use of that food additive, provided that the food safety assessment is done. The food additive regulation is currently being revised to meet the demand and ensure food safety; to harmonize local food regulation with international food control laws and regulations; as well as to update the list of permitted food additives and prescribe guidelines for their use and application in food distributed in the Philippines.

Dr. Manojit Basu of Johns Hopkins University and Grocery Manufacturers Associations (GMA) presented his speech on Safety of Food Additives: The Regulatory Roadmap. There are two different paths to obtaining approval of food additives in the U.S.: (1) Food Additive Petition (FAP) and (2) Generally Recognized As Safe (GRAS). For color additives, FAP is compulsory. The major differences between these procedures are the time required for evaluation, and the party which makes safety determination. Self-determined GRAS is not as time consuming as compared to the other 2 procedures as it uses the experts or expert panel for the safety determination. Dr. Basu also gave an overview of the risk assessment and the factors that US FDA abides by to determine that the food additive demonstrates a "reasonable certainty of no harm".

Dr. Maia Jack from American Beverage Association (ABA), presented on Codex and IPCS Risk Assessment Framework: A Case Study on Benzoates. Benzoates are used as the preservative in beverages to prevent microbial spoilage; at present, there are no good substitutes for benzoates. If benzoates level used is less than the minimum inhibitory concentrations, the spoilage microbes will acquire resistance towards benzoates. In 2016, CCFA lowered the permitted benzoates level from a general use of 600 ppm to 250 ppm and in some cases this eventually increased the challenges in microbial spoilage mitigation. Dr. Jack said that CCFA continues to consider further reductions in view of the JECFA conclusions that the Acceptable Daily Intake (ADI) of 5mg/kg bw/day is exceeded among young children and adolescents. Many of the existing modeling assessments leverage default assumptions that may lead to overestimations of intake and the underestimations of appropriate ADIs. An opportunity may exist to move towards more reasonable modeling assumptions. The refined assessments suggest that there are no intake concerns across life-stages, and that ADI can be increased to at least 10mg/kg/d.

Procedures for Approval of Food Additives: Case Studies
Dr. Cureton shared on the Procedures and Data Requirements for the Approval of Food Additives in the U. S. All substances defined as food additives must undergo premarket approval by FDA. In addition to premarket mandate, FDA also conducts extensive post-market monitoring and has a science-based framework to prioritize and reassess prior safety decisions. The Office of Food Additive Safety (OFAS) administers FDA’s program for the premarket evaluation of food and color additives as well as the notification program for GRAS substances. It also accomplishes science-based regulatory oversight of the use of substances added to food and serves as the focal point for FDA-initiated regulations on matters pertaining to the provisions of the GRAS and food and color additive sections of the Federal Food, Drug, and Cosmetic Act.

The next presentation on Safety Assessment of Food Additives: Approaches in Philippines was shared by Prof. Abigail Rustia from University of the Philippines. She described the significance of the Philippine Food Safety Act (RA 10611) for safety assessment of food additives, including the regulation, jurisdiction, definitions, and approval processes for substances intentionally added to or unintentionally present in the food. Her presentation also discussed if a regulatory framework is present or established to ensure that food additives used, sold, and consumed are safe for human consumption; and discussed on harmonization to international standards such as Codex. Prof. Rustia then summarized the initiatives conducted in the Philippines in the safety assessment of food additives.

Safety and Benefits of Food Additives: Case Studies
Dr. Sue Ann McAvoy, International Association of Color Manufacturers (IACM) discussed the topic of Safety and Benefits of Food Colors. Food colors have many benefits in foods which include impacting taste perception and restoring inherent color lost
during food processing. To protect consumers, food laws have been developed around the world on food colors and have evolved primarily as positive lists that define substances that may be added to color food with the maximum amounts allowed. Dr. MaAvoy noted that existing color safety evaluations conducted by JECFA, supplemented by those from other established governmental scientific bodies such as the US FDA and EFSA, should form the basis for global harmonization of food color standards and regulations.

The following topic on Understanding the Safety and Global Regulatory Status of Low/No Calorie Sweeteners (LCNS) was presented by Dr. Ashley Roberts from Intertek. The LCNS undergo rigorous safety evaluation process involving the development of a comprehensive scientific database. This information is then presented to the regulatory authorities for their independent evaluation. Following a thorough review of the data provided, the regulatory authority will determine the “safe level of exposure through derivation on an ADI. Toxicological studies of LCNS covers all circumstances of human exposure so ADI applies to children and pregnant women as well. Intake analyses conducted in many countries confirm that daily intake of LNCS is a small fraction of ADI, further confirming safety.

In his presentation on Public-Private Partnerships in the Development of Food Safety Regulations, Dr. Manojit Basu shared on national legal frameworks that are the key pillars in an effective food control system. In all countries, food is governed by a complexity of laws and regulations which set out the government’s requirements to be met by food chain operators to ensure the food is safe and of adequate quality. However, active participation of all stakeholders including regulatory agencies, research institutes, manufacturers, and consumers are equally important in ensuring safe food. Dr. Basu later gave an overview on the suitability of food additives and discussed the approaches taken by the regulatory agencies, industry, as well as the research institutes to ensure regulations in the two case studies shared.

Food Additives: Issues and Current Trends
The topic of Food Color Lakes and Exposure Concerns was presented by Dr. Sue Ann McAvoy. Color lakes are used for food products when water is not available for hydration of dye. The use of lakes is widely approved for use globally. Aluminum lakes are mentioned in the definition of color additives in JECFA color specifications which share the same INS numbers with the corresponding dyes. Recent exposure assessment has found that combined average consumer intakes of aluminum in Australia, Europe, and the US, among the countries are below the provisional tolerable weekly intake (PTWI) established by JECFA. Any instances of exceeding the PTWI have consistently been shown to be a result from other specific functions of aluminum additives that are unrelated to applications of color lakes. Thus, Dr. McAvoy noted that limiting the use of lakes will do little to address the concern on excessive aluminum exposure.

Dr. Maia Jack next gave a presentation on Caffeinated Beverages. The increased availability of non-traditional caffeinated drinks has raised concern about the energy drink category among regulators, legislators, media, and the public. Misconceptions of caffeine consumption have increased in tandem with the growth of the energy beverage category. On the other hand, the large body of science continues to demonstrate the safety of caffeine at amounts commonly consumed by Americans. Based on the ABA caffeine research, the increase in consumption of energy drinks did not increase caffeine intake among Americans. The main source of caffeine in the American diet is still coffee, and the effects from caffeine are not adverse even among teenagers and young adults.

The final presentation was presented by Mr. Chih-Yung Wu, Foreign Agriculture Service, USDA, on Food Additives: Current Trends and the Effect on International Trade. The increase in demand for processed food increases the use of food additives. However, the current trends in consumer perception of food additives have caused companies to reformulate, and countries to ban the use of certain additives. These decisions are not made entirely based on science, and have instead caused trade disruptions and barriers internationally. As technology evolves, information is made available more easily; however, not all are factual. Mr. Wu shared a few examples of the misinterpretation of information on food additives that have evolved into trade concerns. Thus, the Foreign Agricultural Service of USDA aims to communicate and educate its partners, and promote the use of science-based standards by utilizing capacity building activities.

Discussion and Conclusion
In the Q & A session that concluded the seminar, there was interesting discussion on prevailing misperceptions of food additives. Although studies have shown that science-based evidence can be used to overcome such misperceptions, evidence takes time to be generated. While professional communications teams using scientific data are used by the food industry to communicate to the public, it was pointed out that governments also have an important role to play in reaching out to educate the public. The role of social media in information dissemination was also discussed.

It was agreed among the participants and stakeholders that regulations could be a better way for authorities to control the dissemination of false information. Initiatives should also be implemented to engage social media influencers and provide them with science-based information. This would help to ensure that information disseminated via social media are reliable and based on science.
Gut Microbiota and Impact on Overall Health

Gut microbiota has generated great interest in the scientific communities, both globally as well as in the region. Recent studies have shown that the intestinal value of food is influenced by the individual’s gut microbiota and food, in turn, shapes the individual’s gut microbiome. On May 17, 2018, the ILSI SEA Region Philippines Country Committee organized a seminar in Manila, Philippines, to promote understanding of the intestinal microbiome and its implications for health and disease at each life stage.

In the opening presentation, Prof. Patricia Conway, University of New South Wales, Australia, discussed the topic of gut microbiota across the lifespan. At birth, the digestive tract is relatively sterile, but is subsequently and successively colonized with microbes acquired from the mother, the hospital environment, siblings, pets and the home environment. The composition of the microbiota is influenced by these early life exposures as well as the mode of delivery, diet and medications. Gut microbiota has been linked to childhood diseases including digestive, respiratory and allergic conditions in children. By two years of age, the gut microbiota is relatively complex and diverse, containing both potentially harmful and beneficial bacterial strains.

Among adults, lifestyle choices including diet, exercise, medications, alcohol and various stresses can impact on the composition or function of the gut microbiota, and can lead to a disturbance of the gut microbiota. This is referred to as gut dysbiosis and is associated with many diseases.

Prof. Leslie Michelle M. Dalmacio, College of Medicine, University of the Philippines Manila, discussed the effect of diet on the composition of gut microbiota, specifically, the type of microorganisms being favored by the intake of various dietary food components such as protein, fat, carbohydrate, short chain fatty acids, polyphenols, and other compounds. The source of food material, whether animal or plant-derived, have also been found to favor particular groups of microorganisms. In general, animal-based diet often high in protein but low in carbohydrate, favor the proliferation of Clostridia, Bacteroidetes, Alistipes and Bilophila.

On the other hand, diets high in plant-derived protein, digestible and non-digestible carbohydrates, and low in saturated fat tend to increase Bifidobacteria and Lactobacilli. Recent
comparative studies have shown that the type of diet (rural or modern/western) largely show variations on the microbiota, including that of a study done in Leyte by the Asian Microbiome Project. The study showed that overweight and obese children living in Ormoc, who consumed a high-fat diet, harbored microbiota with a high Firmicutes to Bacteroides ratio and low abundance of Prevotella.

**Gut Microbiota: Impact on Obesity and Diabetes Mellitus** was presented by Dr. Gabriel V. Jasul, St. Luke’s Medical Center, Quezon City. Dr. Jasul shared that some animal studies have shown that altering dietary and related factors can influence gut microbiota with consequent development of diseases, such as obesity, diabetes, and metabolic syndrome. Gut microbiota have known direct and indirect metabolic functions through microbial metabolites. Putative pathways linking the gut microbiota to obesity and metabolic syndrome include increased energy absorption from both the small intestine and the colon, increased gut permeability, and release of soluble factors altering cell signaling that may affect appetite and energy balance.

Dietary patterns through variations of macronutrient composition and many environmental factors can affect the predominant gut bacteria. The individual environment starting from in utero exposure (exposure to maternal microbiome) to birth (affected by manner of delivery), to feeding (breast milk or milk formula), early antibiotic exposure, and subsequent usual dietary pattern all contribute to the individual’s gut microbiome and subsequent disease risk. Modulating the dietary and environmental factors can thus change the profile of one’s gut microbiota, which can likely modulate health status and disease risk.

Dr. Grace R. Battad, College of Medicine, presented a scientific update on gut microbiota in gastrointestinal diseases. Dr. Battad said that a majority of the antibody-producing cells are found in the gastrointestinal tract. In the gut, there is normally a balance or homeostasis where the commensal organisms live within the host but do not cause adverse events. However, when the balance is disturbed by anti-microbial intake, unhealthy diet and pollution, dysbiosis occurs. The commensal microbes can breach the intestinal barrier and produce GI illnesses. These illnesses have been studied and found to involve specific strains of microbes: acute gastroenteritis, infantile colic, constipation, antibiotic associated diarrhea.

In order to restore balance, bacteriotherapy for each illness has been conducted in clinical trials. This includes intake of probiotics, which are live microorganisms given in adequate amounts to confer health benefits on the host. It is important to remember that not all probiotics are the same. Strain specificity must be observed and study results on a strain cannot be applied to another strain. More studies are needed to examine the role of bacteriotherapy in various GI conditions.

**Gut-feel and Mental Health: the Role of Human Gut Microbiota** was presented by Dr. Gerardo Carmelo B. Salazar, Lucena United Doctors Hospital. Dr. Salazar shared that the gut-brain axis is a bidirectional communication between the central nervous system (CNS) and the enteric nervous system (ENS). It reacts to a variety of dietary products it absorbs, the broad spectrum of pathogens that it encounters and the diverse microbiome that it harbors. The dynamic ecosystem in the GI tract translates chemical cues from the environment to neural impulses that propagate throughout the gut, the immune and endocrine systems including the CNS. There is increasing evidence that the gut microbiome can influence neural development, brain chemistry and a wide range of behavioral phenomena, including emotional behavior.

**Promoting Healthier Food Choices through Pre- and Pro-biotics** was presented by Ms. Aleli Elizabeth Magtibay, Nestlé, Philippines. She noted that several research studies have been conducted on probiotics and the results have shown that their effects are specific to certain strains. Some strains appear to be safe and effective. Moreover, some prebiotics can increase the growth of both good and bad bacteria. More in-depth studies can be conducted to explore further health implications regarding the use of prebiotics and probiotics. The evidence required for a probiotic, a prebiotic, or a combination of a probiotic and a prebiotic for health claims require characterization of relevant strain, identification of the health relationship, and demonstration of health effects in a normal healthy target population.

The seminar concluded with closing remarks from Dr. Celeste C. Tanchoco, Coordinator of the ILSI SEA Region Philippines Country Committee Coordinator, thanking the speakers and stakeholders who have contributed to the seminar.
Regulatory Developments in the Safety Assessment of GM Food Crops and New Plant Breeding Technologies

Technological change is occurring at an unprecedented rate in the global agri-food value chain, and new biotechnologies are a major part of this transformational change. A half-day forum was organized by ILSI SEA Region, together with the United States Department of Agriculture (USDA) Foreign Agricultural Service and the Genetic Modification Advisory Committee (GMAC) Singapore, and in collaboration with CropLife Asia, to provide an update on new plant breeding technologies and discuss the regulatory process and systems for safety assessment of GM food crops.

Held in Singapore on July 2, 2018, the forum was chaired by Prof. Prakash Kumar, Chairman of GMAC.

Professor Les Copeland, University of Sydney, Australia, commenced the forum by providing an Update on New Plant Breeding Technologies. Prof. Copeland discussed how greater knowledge of genomes and the use of new gene editing tools, such as CRISPR-Cas9 for targeted modification of plant genomes, are providing fresh insights into fundamental questions about the genetic potential, genetic variability, and quantitative traits of plants.

These technologies, in combination with innovative practices for monitoring and managing agricultural systems, are opening up new pathways to delivering ‘smart’ and sustainable food production systems of the future. Prof. Copeland emphasized the need for the adoption of new technologies that are not necessarily targeted towards agriculture, and the use of social media by scientists to engage with and build trust among the community, particularly urban consumers who have lost their connection with agriculture.

Mr. Tad Manabe, CropLife Asia, presented on Safety Assessment of Stacked GM Products in Japan. Japan imports large quantities of agricultural commodities such as corn and soybean to meet its food security objectives, with most of these commodities coming from genetically modified plant varieties. Under its Food Sanitation Law and Feed Safety Law, Japan regulates products derived from recombinant technology, also known as genetically modified organisms, for their use as food and feed. As a party to the Cartagena Protocol on Biosafety, Japan also regulates from a biosafety perspective.

Japan’s regulatory systems cover safety assessment for single-trait and stacked-trait products and uses the very efficient High-Cover-Low concept, where no additional assessments are required for A x B, A x C, B x C stack varieties once A x B x C is approved. Since its first approval in 2001, multiple approvals have been granted on a diversity of crops and traits. With experience in regulatory safety assessment accumulated over many years, Japan’s system has continued to be scientifically robust and provides key learnings for stakeholders in Singapore, where stack regulation has recently been introduced.
Mr. Manabe also presented and discussed the regulatory system for GM-breeding stacks.

Dr. Carl Ramage, Rautaki Solutions, Australia presented on Developing Efficient Regulatory Systems Through Regulatory Cooperation. The use of biotechnology in agriculture continues to rapidly expand, particularly in key globally traded commodities such as maize, soybean, cotton and canola. More recently, new breeding technologies offer a paradigm shift in food production, including challenges to food regulation. The regulation of products from biotechnology varies widely across the Asia-pacific region, largely based on local economic, political and societal motives. However, all regulatory agencies, regardless of geography, share the same mandate – to ensure the health and safety of consumers and to protect the environment.

The diversity of regulatory frameworks has resulted in some jurisdictions having highly functional and well-resourced regulatory systems, while others have relatively weak systems or no formal regulations at all. This diversity has also resulted in wide differences in the degree and level of protection afforded to the populations across the region and is a major constraint to the introduction of new and novel food products that can address some of the region’s most pressing needs (e.g. food security, environmental sustainability and socio-economic improvement). Further, the rapid development and introduction of new biotechnology products add pressure to those countries where regulatory systems are weak and/or poorly resourced.

Over the past 20 years, more than 1,260 food safety decisions across 28 countries have been made from the assessment of agricultural biotechnology products. Often, the assessments have been made on the same products or proteins with many years of safe use. In all cases, without exception, the agencies have arrived at the same conclusion on a product’s safety. This high level of agreement suggests there is a more efficient way to regulate biotechnology products.

Regulatory convergence and cooperation are recognised as mechanisms to reduce the burden on individual countries, extend the reach beyond borders and drive continuous improvement of national regulatory systems. Regulatory convergence represents a process where the regulatory requirements across countries or regions become more similar or aligned over time as a result of the gradual adoption of internationally recognised technical guidance documents, standards and scientific principles. It does not necessarily represent the harmonisation of laws and regulations, which is not a prerequisite for allowing the alignment of technical requirements and greater regulatory cooperation.

Recently, Health Canada (HC) and Food Standards Australia and New Zealand (FSANZ) undertook a pioneering step in improving the efficiency of the assessment processes for biotechnology products across regulatory jurisdictions. Through two pilot studies, a new process has been established that allows the sharing of information and assessments between the organisations. Such regulatory cooperation is likely to have significant positive impacts beyond those realized by the two founding agencies. Dr. Ramage presented the HC/FSANZ case study and discussed the benefits of regulatory cooperation.

**Discussion and Conclusion**

Interesting discussion was held during the Q & A session. Concerns were raised about the role of communication on new plant breeding technologies, as well as GM food products to the consumers. In this digital landscape, the public now heavily relies on social media as the source of information. One of the experts commented that scientists should be more proactive in public communication as part of science-based risk communication. It was suggested that an independent body could be established to educate the public on these issues. Regarding the issue of GM Food labelling, it was suggested that regulators should not be seen as advocates but should be independent in handling this issue.
Recognizing the importance of developing good quality food composition databases (FCDBs) in the region, ILSI SEA Region has been collaborating with the ASEANFOODS Network over the past two decades. The ASEANFOODS Network is dedicated to the continuous contribution of knowledge and information towards improving food and nutrition security and achieving sustainable diets. The task can be successful through promoting and supporting the development of national and regional FCDBs, and ensuring that they are maintained at a high standard and are accessible to all users.

Jointly organized by ILSI SEA Region, ASEANFOODS, Institute of Nutrition, Mahidol University (INMU), Thailand, and the Department of Medical Research, Ministry of Health and Sports, Myanmar, a 5-day ILSI SEA Region & ASEANFOODS FOODCOMP Training Course 2018: Development and Evaluation of Quality Food Composition Database took place on September 3-7, 2018 in Yangon, Myanmar.

The training course:
1. Demonstrated how food composition data (FCD) analysts generate FCDB using and harmonised protocols, with quality control systems at all steps to obtain quality FCDB;
2. Shared how FCD compilers assemble the data using standard protocols to make the data accessible to the users with the most effective means;
3. Explained how FCD users competently use the quality FCDB;
4. Shared how the FCD generators, compilers and users work together to support each other; and
5. Conveyed the importance of FCD for multiple sectors and professions.

Four facilitators, namely Prof. Barbara Burlingame from Massey University, New Zealand and Assoc. Prof. Prapasri Puwastien, Assoc. Prof. Kunchit Judprasong and Mr. Piyanut Sridonpai from INMU, Thailand, had developed the training course and its materials. A total of nineteen professionals who participated in the training course were from various food and nutrition specialties, representing different sectors in Myanmar, Lao PDR and Cambodia. They included FCD generators, compilers and users. Participants from Myanmar were from the Department of Medical Research and Department of Public Health under the Ministry of Health and Sports, as well as the Food and Drug Administration. In addition, there were two participants from Department of Health System Research and Department of Food and Nutrition Research under the Lao Tropical and Public Health Institute, Ministry of Health, Lao PDR and two from Department of Fisheries Post-Harvest Technologies and Quality Control (DFPTQ) as well as Food and Nutrition Security Division, DFPTQ under the Fisheries Administration (FiA), Cambodia.

In his welcome speech, Prof. Dr. Zaw Wai Soe, Acting Director General of the Department of Medical Research, Ministry of Health and Sports, Myanmar, expressed his strong support for nutrition programs in the country and the importance of having a proper FCDB to aid in these programs and future plans for the country. Ms. Pauline Chan, Director of Scientific Programs, ILSI SEA Region, addressed the audience and thanked the organizers, facilitators and participants for their support in the training course, noting the importance of the course in helping to develop quality FCDB that is critical to the countries. Lastly, Assoc. Prof. Kunchit Judprasong, Co-ordinator of the ASEANFOODS Network, welcomed the participants and elaborated on the network’s mission in developing and supporting quality FCDB.

Conclusion
All in all, the 5-day training course concluded well with suggestions and recommendations provided by the four facilitators to the participants on developing quality FCDBs in their respective countries.
Nutrition and Life Course Approach to Healthy Aging

The ILSI SEA Region Philippines Country Committee recently held a seminar on Nutrition and Life Course Approach to Healthy Aging. The seminar was held on September 25, 2018 in Manila, with the objectives of describing the aging process through the life course; characterizing the nutrition and health profile of older persons across the region; sharing recent studies on determinants of successful aging; describing nutrition and dietary approaches to reduce risk to sarcopenia; the aging brain and physical inactivity. The seminar also provided an update on new technologies on food product development, as well as presenting efforts to promote a healthy aging agenda for the older persons.

Defining Healthy Aging

In the first presentation, Dr. Shelley de la Vega, Institute of Aging, University of the Philippines, defined "aging" as the "accumulation of changes responsible for the sequential alterations that accompany advancing age and the associated progressive increases in the chance of disease and death". In contrast, "healthy aging" is defined as the "the process of developing and maintaining the functional ability that enables well-being in older age." The Dr. de la Vega also provided an overview of human development from young to late adulthood, the quality of life of Filipino older persons, and how to enable well-being at old age.

Nutrition and Health Profile of Older Persons

This session commenced with a presentation by Dr. Sofia Amarra, ILSI SEA Region on the topic of Aging and Health across Southeast Asia: How do the Philippines Compare? She pointed out that, unlike other countries in the region (e.g., Thailand, Singapore), the Philippines do not have an aging population as yet. However, life expectancy and healthy life expectancy in the Philippines is much lower, with poorer health status. Mortality from non-communicable diseases, unsafe water, hygiene and sanitation (WASH), household and ambient air pollution are among the highest in the region. Dr. Amarra identified metabolic, behavioral and environmental risk factors, and recommended studies to identify determinants of disease in order to propose best practices that will promote healthy and successful aging among Filipinos.

Ms. Marilou Madrid of Food and Nutrition Research Institute (FNRI), Philippines, presented on Nutritional Status, Dietary Intake, Functional Capacity and Quality of Life (QOL) Among Urban Community-Dwelling Older Persons in the Philippines. She concluded that both under- and over nutrition exists among older persons in NCR but they can still perform activities of daily life independently irrespective of age, BMI and health condition. The QOL assessment suggested a positive outlook among the older persons, in general. Ms. Marilou recommended that health care and support services, as well as, nutrition and health education, should be made more accessible.

The topic of Correlates of Cognitive Health in Filipino Women was presented by Dr. Judith Rafaelita Borja, University of San Carlos, Philippines. Dr. Borja presented a study which explained the cognitive function, measured through the Mini-Mental State Examination Philippine-Cebuano version (MMSE-PC) and the Clock Drawing Test (CDT), in a community-based sample of 46-79 year-old women from the Cebu Longitudinal Health and
Nutrition Survey (CLHNS). Of the 574 women aged ≥60, about 46% were classified as cognitively impaired (MMSE-PC scores ≤ 23). The mean score for the 4-item CDT was 3.2 (±0.9) with lower scores among those ≥60 compared to younger women (mean 3.0 vs. 3.4 respectively). A significant positive association was identified between having at least high-school level education and assets scores. Cognitive impairment is also known to exist with other morbidities. Poor CH was significantly associated with severe disability (activities of daily living (ADL), instrumental ADL and physical limitations).

Dr. Eduardo Poblete, St. Luke’s Medical Center, expounded on the Determinants of Successful Aging. As there is no current consensus on the definition of successful aging, he offered the concept that successful aging is the absence of depressive symptoms, cognitive impairment and symptoms of respiratory and systemic disorders.

Dr. Satoshi Fujita of Ritsumeikan University, Japan focused on the topic of Dietary Approach to Reduce Sarcopenia Risk. Dr. Fujita stressed that nutrient intake is the most important anabolic stimi for skeletal muscle. Specifically, intake of protein / amino acids (especially leucine) can stimulate muscle protein synthesis. However, age-specific changes in muscle anabolic responses to amino acid leucine becomes apparent in older subjects. Consequently, recent evidence indicates that dietary protein intake below RDA in older individuals further accelerates the age-associated muscle loss. Resistance exercise is another anabolic stimi which increases muscle protein synthesis in both young and older individuals.

Different forms of cognitive impairment of the aging brain was discussed by Dr. Delfin Darwin Dasig, Makati Medical Center. Dr. Dasig discussed cognitive functioning in normal elderly (successful aging) and cognitive functioning in disorders frequently encountered by the elderly, particularly Mild Cognitive Impairment and Dementia (Alzheimer’s disease, Vascular Dementia, Dementia with Lewy Body and Frontotemporal Dementia). The presentation also included other risk factors for cognitive impairment and measures to maintain good cognitive function.

Prof. Hercules Callanta of the University of the Philippines Diliman discussed Exercise for Health among the Older People. He stressed that exercise provides a host of gains to health and fitness that can improve muscular strength, flexibility and range of motion, balance, and overall functional independence among older people. Prof. Callanta highlighted that research has shown that such benefits include reduced all-cause mortality and reduced risk of developing conditions such as cardiovascular disease and type 2 diabetes. Exercise also helps control weight gain, and keeps lost weight off. Still other studies show that it can improve mood, regularize sleep, boost energy and even bring back the spark to one’s sex life.

The next presentation was by Dr. Marissa V. Romero, PhilRice, and entitled, The Rice Way for Long Quality Living. She pointed out that moderate rice consumption is recommended for quality living. Aside from the right amount of rice intake, healthier forms of rice should be consumed. These include brown rice, germinated brown rice, pigmented rice, low-protein rice, and other varieties which contain higher amounts of nutrients or health-promoting properties than the commonly consumed milled or polished rice. The development of functional rice through modern breeding tools holds great promise and benefits. Rice with beta carotene (Golden Rice) that can be converted to Vitamin A in the body aims to reduce Vitamin A deficiency. Iron- and zinc-dense rice varieties are targeted to combat anemia and zinc deficiency, respectively. Dr. Romero concluded that healthier rice consumption can be a key to long quality living.

Engr. Rosemarie Garcia, FNRI, Food and Nutrition Research Institute described three potential functional food products: ready-to-drink yacon (Smallanthus sonchifolius) juice, stabilized brown rice (Oryza sativa L.) and germinated brown rice beverage. The main raw materials used including the health benefits of each final product was discussed. Two nutrition education tools, the Menu Guide Calendar and Pinggang Pinoy, were included in the presentation. The calendar aims to highlight the importance of planning for nutritious and affordable meals. This articulates how the Institute reaches out in its advocacy towards healthy eating, using easy to follow recipes, cycle menus and a food plate model, specifically recommended for older persons.

The presentation on Efforts to Promote a Healthy Aging Agenda for the Population was presented by Dr. Rosa Minerva Vinluan of the Department of Health (DOH), Philippines. The DOH issued Administrative Orders for health implementers to undertake and promote the health and wellness of senior citizens as well as to alleviate the conditions of older persons who are encountering degenerative diseases. The Health and Wellness Program for Senior Citizen (HWPSC) of the DOH intends to provide focused service delivery packages and integrated continuum of quality care, patient-centered and environment standard to ensure safety and accessibility for senior citizens, equitable health financing, capacitated health providers in the implementation of health programs for senior citizens, data base management, and strengthened coordination and collaboration with other stakeholders involved in the implementation of programs for senior citizens.

Concluding the seminar, Ms. Jo Ann Marie Salamat, Chairperson of the ILSI SEA Region Philippines Country Committee, thanked the speakers for their excellent presentations, and the participants for their attendance at the seminar.
2018 Dr Dave Roberts Memorial Award in Food and Nutritional Science

Dr. Dave Roberts was a very active member of ILSI SEAR Australia’s Board of Trustees, and ILSI SEA Region’s Board of Directors. He had contributed significantly to ILSI SEAR Australasia’s development and scientific programs over the past decade, and had also contributed to a number of programs and scientific meetings that were organized in Southeast Asia since the 1990’s.

Passionate and committed to ILSI SEAR Australasia’s activities in widening the scientific knowledge of the community, Dr. Roberts was supportive of younger academics and students in their professional development. He also developed strong linkages with industry through his role as Scientific Director and Deputy CEO for Australian Food and Grocery Council (AFGC), and as a board member for Food Standards Australia New Zealand (FSANZ). These linkages proved invaluable in his role with ILSI when creating scientific agenda that were relevant and challenging to both academia and industry.

This award has been established in conjunction with the University of Newcastle, Dr. Roberts’ alma mater, and the inaugural award was made in April 2017.

ILSI SEAR Australasia is proud to announce that the 2018 Dr Dave Roberts Memorial Award in Food and Nutrition was presented to Dr. Rebecca Williams.

Dr. Rebecca Williams is a postdoctoral research fellow within the Priority Research Centre for Physical Activity and Nutrition and the School of Health Sciences, at the University of Newcastle, Australia. Dr. Williams was awarded a PhD in February 2017, with her thesis “Sex Differences in Obesity and Responses to Obesity Treatment” which investigated the many physiological and behavioural differences between males and females. In particular, Dr. Williams’ PhD research focused on changes to appetite-related biochemical markers during weight loss and also the influence of food intake on biomarkers of disease status. Dr. Williams’ current field of research focuses on the role that nutrition therapy may have in the treatment of cancer.

ILSI SEA Region congratulates Dr. Williams on receiving the 2018 Dr. Dave Roberts Memorial Award in Food and Nutritional Science.
Meetings

Conference
Human Variability in Food and Nutrition: The Challenges and Opportunities for Industry and Academic Research
May 2019, Sydney, Australia

Human variability in food and nutrition refers to the underlying differences between individuals in their physiological, health and psychological responses to nutrient inputs, where interventions may elicit a wide range of responses. It is important to determine if individual human variation in response to food constituents offers a path forward for personalised nutrition, and to explore how this may occur.

This 2-day conference will discuss on the nature of variability in our world and in the human condition, the anticipated benefits of this approach and how it dovetails with other areas of personalisation in human health. It will also share the practical perspective and advantages for the individual and consumer, and the potential challenges for research and development.

Symposium

Food Packaging and Food Contact Materials: Safety, Technology, Sustainability, and Regulatory Perspectives
September/October 2019

Food packaging plays a crucial part in the food supply chain. It serves as the protective barrier for the packaged food, and eases the transportation and distribution of the food supply. A variety of novel packaging technologies have been developed to cater to industry requirements and consumer desires. However, concerns on safety and the impact of food packaging on the environment have been raised.

This symposium will discuss the safety issues related to food packaging and contact materials; provide insights on the impact of food packaging on the environment; share the emerging trends in food packaging; and provide updates on the regulatory status of food contact materials in different countries.

Publications

ILSI SEA Region Functional Foods Monograph 2017
Since 2001, ILSI SEA Region has been working in the area of functional foods and claims, including the facilitation of a series of seminars, workshops and expert consultations for regulators, researchers and scientists, and relevant food industry personnel from the Asian region to discuss important and relevant issues on nutrition labeling and claims. These include processes for scientific substantiation for nutrition and health claims, development and status of functional foods in Asia, benefits and effects of functional foods and components on microbiota and gut health as well as cardiovascular diseases.

Recognizing the rapid development of functional foods and claims in Southeast Asia, ILSI SEA Region has published a new Monograph on Functional Foods. This monograph elaborates ILSI SEA Region’s initiatives on functional foods, provides updates on regulatory developments and scientific substantiation of health claims in the region, and presents case studies on selected functional foods in Southeast Asia.

# ILSI SEA Region Activities 2018-2019

## Meetings

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Event Description</th>
<th>Date/Location</th>
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<tbody>
<tr>
<td><strong>Food and Nutrients in Health and Disease (FNHD) Science Cluster</strong></td>
<td>Regional Symposium &amp; Workshop on Food Consumption &amp; Nutrients Intake in ASEAN</td>
<td>2nd Quarter 2019</td>
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<td></td>
<td>Conference on Human Variability in Food and Nutrition: The Challenges and Opportunities for Industry and Academic Research</td>
<td>May 2019</td>
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<td></td>
<td>Seminar on Micronutrient Fortification</td>
<td>3rd Quarter 2019</td>
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<tr>
<td><strong>Technical Committee on Maternal, Infant and Young Child Nutrition (MIYCN)</strong></td>
<td>Seminar and Workshop on Maternal, Infant and Young Child Nutrition: Maternal Nutrition and Birth Outcomes in Southeast Asia</td>
<td>November 13-14, 2018</td>
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<tr>
<td><strong>Nutrition and Food Guidance for Public Health (NFGPH) Science Cluster</strong></td>
<td>2nd National Workshop on Food and Nutrition Labeling and Claims in Myanmar (By Invitation Only)</td>
<td>December 13, 2018</td>
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<td></td>
<td>Seminar on Micronutrient Fortification</td>
<td>3rd Quarter 2019</td>
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<tr>
<td><strong>Food Safety and Risk Assessment (FSRA) Science Cluster</strong></td>
<td>Workshop on World Bank GFSP Food Chemical Risk Assessment Training Module – for ASEAN</td>
<td>March 2019</td>
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<td></td>
<td>Training Workshop on Risk Communication</td>
<td>2nd Quarter 2019</td>
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<td></td>
<td>Symposium on Food Packaging and Food Contact Materials: Safety, Technology, Sustainability, and Regulatory Perspectives (In conjunction with 11th ILSI BeSeTo Meeting)</td>
<td>September/October 2019</td>
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<tr>
<td><strong>Sustainable Food Systems (SFS) Science Cluster</strong></td>
<td>ILSI SEA Region Symposium Session on Sustainable Food System &amp; Diets – Implication &amp; Relevance for Nutrition Security @ 5th International Rice Congress</td>
<td>October 16, 2018</td>
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<tr>
<td><strong>Others</strong></td>
<td>ILSI Annual Meeting 2019</td>
<td>January 8-13, 2019</td>
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<td>ILSI Southeast Asia Region Annual Meeting 2019 and Science Symposium</td>
<td>April 23-25, 2019</td>
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<td></td>
<td>ILSI SEA Region Sponsored Sessions @ Asian Congress of Nutrition 2019</td>
<td>August 4-7, 2019</td>
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<td>11th ILSI BeSeTo Meeting</td>
<td>September/October 2019</td>
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<td></td>
<td>ILSI SEA Region Country Committees events under planning</td>
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### Research, Meeting Reports, and Collaborative Projects

#### Food and Nutrients in Health and Disease Science Cluster

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Status</th>
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| Patterns of Sodium Intake and Sources of Sodium Among Filipinos Aged 19 to 50 Years: Findings from the 2008 National Nutrition Survey  
*In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines* | Journal review completed; paper under revision |
| Symposium Proceedings: Sugar and Sweeteners: Science, Innovations, and Consumer Guidance for Asia | Submitted to journal; under review |
| Data Analysis: Levels and Sources of Sugar Intake in the Philippines  
*In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines* | To be initiated |
| Measurement of Total Sugar Content of Commonly Consumed Foods in Malaysia  
*In collaboration with Ministry of Health, Malaysia* | Initiated |

#### Technical Committee on Maternal, Infant and Young Child Nutrition

<table>
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<tr>
<th>Project Description</th>
<th>Status</th>
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| Vitamin D Status and its Correlates among Pregnant Thai Adolescents  
*In collaboration with Mahidol University, Thailand* | On-going |
| Topic: Success and Failures of Dietary Supplementation of Pregnant Women in Philippines (review) | On-going |
| Topic: Maternal Nutrition and Birth Outcome in Malaysia: Current Status and Risk Factors (review) | On-going |

#### Nutrition and Food Guidance for Public Health Science Cluster

<table>
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<tr>
<th>Project Description</th>
<th>Status</th>
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| Review of Nutrition Labeling and Nutrition and Health Claims in Asia  
*In collaboration with ILSI Asian Branches* | On-going (Completed: Available January 2019) |
| Measurement of Total Sugar Content of Commonly Consumed Foods in Malaysia  
*In collaboration with Ministry of Health, Malaysia* | Initiated |
| Pilot Project on Inclusion of Private Data into National FCDBs in Malaysia, Philippines, Singapore and Thailand | Initiated (To be undertaken in phases) |

#### Food Safety and Risk Assessment Science Cluster

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<tr>
<th>Project Description</th>
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| Study on Dietary Exposure of Sweeteners in Thai Consumers  
*In collaboration with Institute of Nutrition, Mahidol University, Thailand* | Completed. Publication under preparation |

#### Special Projects and Others

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Status</th>
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| Topic: Nutritional Status, Diet, and Health of Anemic Individuals with and without Hemoglobinopathies in Metro Manila, Philippines  
*In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines* | 2nd part of study; Paper to be prepared |
| ILSI SEA Region Contribution to the One ILSI Project on Nutrition, Health and Wellbeing: Multi-Country Survey - Profiling the Elderly and Review on Healthy Ageing  
Thailand: in collaboration with Mahidol University; Philippines: in collaboration with University of San Carlos; Malaysia: in collaboration with Universiti Kebangsaan Malaysia (Published) | On-going; 2 of the manuscripts under preparation, 1 paper published |
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<th>Peer-Reviewed Scientific Journals</th>
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<tr>
<td><strong>Health Issues among Low Income Population in Malaysia</strong></td>
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<tr>
<td>Editors: Suzana Shahar (Universiti Kebangsaan Malaysia), Sharifa Ezat Wan Puteh (Universiti Kebangsaan Malaysia), Sofia Amarra (ILSI Southeast Asia Region)</td>
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<tr>
<td><strong>BMC Public Health Supplement (Ongoing)</strong></td>
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<tr>
<td><strong>Adherence of Malaysian Adults' Energy and Macronutrient Intakes to National Recommendations: A Review and Meta-Analysis</strong></td>
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<td><strong>Nutrients, 2018, 10, 1584; doi: 10.3390/nu10111584</strong></td>
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<tr>
<td><strong>Thalassemia and other Hemoglobinopathies among Anemic Individuals in Metro Manila, Philippines and Their Intake of Iron Supplements</strong></td>
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<td><strong>Asia Pac J Clin Nutr, 2018, 27(3):519-526. doi: 10.6133/apjcn.092017.01</strong></td>
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<td><strong>Consumption and Sources of Added Sugar in Thailand: A Review</strong></td>
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<td><strong>Asia Pac J Clin Nutr, 2018, 27(2):262-283. doi: 10.6133/apjcn.042017.08</strong></td>
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<td><strong>Consumption and Sources of Added Sugar in Indonesia: A Review</strong></td>
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<td><strong>Asia Pac J Clin Nutr, 2018, 27(1):47-64. doi: 10.6133/apjcn.042017.07</strong></td>
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<tr>
<td><strong>Report on Food Composition Tables: Review of Status in Southeast Asia Region</strong></td>
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<tr>
<td>Published January 2017 on ILSI SEA Region’s website</td>
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<tr>
<td><strong>ILSI SEA Region Functional Food Monograph 2017</strong></td>
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<tr>
<td>Published Revised Version (August 2018) on ILSI SEA Region’s website</td>
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<tr>
<td><strong>Report on Food Consumption Survey: Review of Status in Southeast Asia Region</strong></td>
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<td>Completed. Publication 2018</td>
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<tr>
<td><strong>Monograph 2 Volume 1: Safety Assessment of Low- &amp; Non-Calorie Sweeteners (LNCS)</strong></td>
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<td>On-going</td>
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<tr>
<td><strong>Updated Report on Regulatory Status of Micronutrient Fortification in Southeast Asia</strong></td>
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<td>Proposed</td>
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