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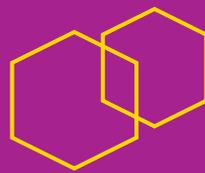


Co-Organizer



*Seminar on*

**FOOD**



# **FORTIFICATION IN SOUTHEAST ASIA**

**Current Challenges, Strategies for the Future**

**November 26-27, 2019**

**Pullman Hanoi Hotel, Vietnam**

## **Summary Report**



Seminar on Food Fortification in Southeast Asia: Current Challenges, Strategies for the Future  
November 26-27, 2019, Hanoi, Vietnam

While there has been increased commitment towards fortification interventions in Southeast Asia over the last few decades, effective implementation and long-term sustainability of these fortification programs are often hampered by technical, regulatory and economic challenges. As Southeast Asia continues to evolve in the dynamic landscape of the double burden of malnutrition, it is imperative to review the role, effectiveness and strategies of food fortification to ensure effective progress towards reducing or eliminating micronutrient deficiencies.

On November 26-27, 2019, ILSI SEA Region and its Vietnam Country Committee, co-organized with the National Institute of Nutrition, Vietnam hosted a 1.5-day **Seminar on Food Fortification in Southeast Asia: Current Challenges, Strategies for the Future** in Hanoi, Vietnam, bringing together over 70 participants, including technical and micronutrient experts, academia, industry and government representatives from Southeast Asia.

The seminar provided key updates on micronutrient intake deficiency, and regulatory status of fortification in Southeast Asia. The effectiveness of food fortification in eliminating micronutrient deficiencies in Southeast Asia was also discussed. Country experiences and industry perspectives on effective delivery of fortified food were shared. At the end of the seminar, all participants gathered at the roundtable discussion to identify key issues and explore practical strategies to overcome fortification barriers in the region.



## Session 1: Issues and Strategies of Fortification

The seminar commenced with **Dr. Regina Moench-Pfanner**, ibn360, Singapore who set the scene with her presentation on **Revisiting Food Fortification Agenda in an Evolving Micronutrient Landscape of ASEAN**. She noted that despite significant economic growth and reduction in poverty, ASEAN countries continue to face the issue of double burden of malnutrition. She presented various evidence illustrating the effectiveness of food fortification in addressing micronutrient deficiency and highlighted the importance of regulatory monitoring and surveillance of food fortification programs to ensure effective implementation. On the other hand, she also recognized the challenges in the implementation and enforcement where critical areas need to be addressed, including poor compliance with mandatory food fortification legislation and regulatory monitoring, inequity in access to fortified foods by the poor populations, and evidence gaps on the nutrient intake and status. Dr. Moench-Pfanner emphasized the need to justify the cost-effectiveness of food fortification to the policymakers, especially the finance ministry as a health investment. Increased political commitment and multi-stakeholder partnerships will also be critical to the future success of food fortification. She hopes that food fortification could be accepted as a complementary public health strategy to reduce micronutrient deficiency and improve the overall nutritional status in the region.

Next, **Assoc. Prof. Pattanee Winichagoon**, Institute of Nutrition, Mahidol University, Thailand shared the findings of the **Multi-Criteria Mapping of Stakeholders' Views on Strategies to Reduce Micronutrient Deficiencies among Women and Children in SEA: The Smiling Project**. She pointed out that increased price, regulatory control, compliance challenges and product acceptability were the key concerns on implementing food fortification. Assoc. Prof. Winichagoon concluded that the stakeholders preferred interventions that were already implemented or familiar and did not prefer interventions that are new or yield high uncertainty or low performance. She underlined the importance of understanding stakeholder's perspectives to identify potential bottlenecks, gaps or concerns that need to be addressed in the implementation of the specific interventions.

Ms. Dora Panagides, Landell Mills, Myanmar spoke on the **Key Considerations in Micronutrient Fortification Process: From Design to Implementation**. She noted that although food fortification programs have been proven effective in reducing diseases relating to micronutrient deficiencies in low and middle-income countries, there has been a lack of understanding on the importance of food fortification, political commitment, resources for assessment and data for decision-making. The implementation of food fortification has also been met with challenges in setting appropriate standards with multiple micronutrient interventions, access to fortified food among certain population groups, cost and demand. In face of these challenges, she elaborated on several key issues for consideration for a successful design and implementation of food fortification program such as the likelihood to contribute to reduction in micronutrient deficiencies, demonstrating cost effectiveness to key stakeholders, consumer acceptability and multi-stakeholder willingness. A regular assessment of the micronutrient deficiency situation and review of fortification regulations based on the latest current evidence and data as well as taking into account the context and implementation factors are essential when assessing program sustainability and impact.

Navigating the Global Fortification Data Exchange (GFDx) website, Ms. Becky Tsang, GFDx, USA demonstrated how **GFDx: An Analysis and Visualization Tool for Industrial Fortification**, an open-access database that provides readily available information can be

used for decision making at country, regional and global levels. Information concerning indicators including legislation status, fortification standards, coverage, availability of food and protocols for regulatory monitoring could be found on five fortified foods, namely, wheat flour, maize flour, rice, salt and oil. She shared that there is potential to incorporate other types of food in the future and hopes that GFDx can be a source for policymakers to help make informed decisions to improve the quality of national fortification programs.

In his presentation on **Unlocking the Potential and Synergy of Biofortification with Micronutrient Interventions**, Mr. Steve Orr, HarvestPlus, Vietnam explained the importance and role of biofortification in reducing micronutrient deficiencies. Differing from genetic engineering and conventional fortification, it is able to improve micronutrient levels in crops through conventional plant breeding to ensure high consumer acceptability. While biofortification offers a sustainable and cost-effective solution for the hardest to reach and low-income populations, it should not be considered as a panacea but a complement to other nutrition strategies to combat micronutrient deficiencies.

**SEA Country Experiences: Current Challenges and Future Priorities for Fortification** was presented by Dr. Siti Muslimatun, ILSI SEA Region Indonesia Country Committee, Indonesia. Based on the country survey gathered from Lao PDR, Philippines, Thailand and Indonesia, she noted that inconsistent and limited national data on micronutrient intake and status remain a key gap among the four SEA countries. Key issues and challenges in fortification implementation varied in each country, with weak regulatory monitoring, limited funding and capacity, and lack of communication on the importance of fortified food being identified as the common barriers to successful implementation. Moving forward, Lao PDR aims to review fortification standards and look into opportunities to fortify other foods to improve other micronutrient deficiencies, considering the successful implementation of mandatory salt iodization while Philippines, Thailand and Indonesia hope to strengthen regulatory monitoring and laboratory testing of fortified foods, improve multi-sectoral coordination and communication across multiple sectors to help improve and sustain national fortification programs to achieve public health objectives.

## **Session 2: Regulations of Fortification**

Ms. Bui Hoang Anh, Vietnam Food Administration, Vietnam provided **Updates of Vietnam Regulatory Status of Micronutrient Fortification** where an overview of the legislation relating to the addition of essential nutrients to foods was shared. She elaborated on Decree No.09/2016/ND-CP which stipulated the compulsory provisions on food fortification with specific micronutrients, including iodine in salt, iron and zinc in flour, and Vitamin A in vegetable oil, and ensuring the use of iodized salt, flour fortified with iron and zinc in food processing. This decree aligns with the international recommendations for a highly effective and low-cost strategy to help in the prevention and control of micronutrient deficiencies and to demonstrate the Government's commitment to improving public health. Permitted levels and form of micronutrients, as well as penalties for violation on food fortification, were also shared. At present, regulatory monitoring is ongoing to ensure organizations or individuals engaged in manufacture, trade and import of micronutrients comply with Decree No.09/2016/ND-CP.

The next presentation was delivered by Ms. Pauline Chan, ILSI SEA Region, Singapore who gave **Updates of SEA Regulatory Status of Micronutrient Fortification**. She shared that most Southeast Asian countries have both voluntary and mandatory fortification regulations, mainly focusing on staple food and condiments which allow a greater proportion of the

population to benefit from food fortification. While Singapore and Brunei only have voluntary fortification regulations, they provide regulatory limits for permitted fortificants. Food manufacturers are also permitted to use nutrient content claims if the amount of a micronutrient meets the stipulated criteria. Ms. Chan concluded by identifying variations in the maximum and minimum limits set for each fortificant in different food categories as an opportunity for potential harmonization in the region. Recognizing its substantial challenge due to differences in food consumption patterns and status of micronutrient deficiencies in Southeast Asia, she suggested to discuss and explore common requirements and criteria of selected micronutrients as a starting base for future harmonization.

### **Session 3: Experience and Perspectives of Fortification**

Dr. Tran Thuy Nga, National Institute of Nutrition, Vietnam shared **Vietnam's Experience: Current Challenges and Future Priorities for Fortification**. She noted that Vietnam has achieved a remarkable reduction in the prevalence of anemia, iodine and vitamin A deficiencies albeit micronutrient deficiencies remain a public health problem today. This was attributed to unsustainable micronutrient interventions, inadequate knowledge and practice on micronutrient deficiency prevention, government budget constraints and lack of financial support from international organizations. Although Decree No.09/2016/ND-CP for food fortification was implemented to address iodine, iron, zinc and vitamin A deficiencies, strong and continuous commitment from both the government and the community is required to achieve effective implementation. Moving forward, Vietnam aims to develop and strengthen platforms for collaboration between the government and food processing enterprises as well as organizations responsible for intervention programs, increase communications on micronutrient deficiencies, raise awareness on the importance of micronutrients and increase consumers' demand for fortified foods. Prevention activities for other micronutrient deficiencies such as vitamin D, calcium, and folate also need to be prioritized if the National Nutrition Survey shows any relevant evidence.

Mr. Geoffry Smith, Essential Micronutrient Foundation, Singapore highlighted in his presentation on **Beyond the 'Big Five': Micronutrients of Emerging Interest for Public Health and Strategic Considerations** that recent studies have shown strong evidence of vitamin D deficiency in most Southeast Asian countries, despite exposure to regular sunlight. Given the importance of vitamin D for bone health and formation, he recommended taking appropriate actions to address the deficiencies such as fortifying edible oil with vitamin D as a viable consideration due to the challenge of seeking good dietary sources of vitamin D that are widely available and affordable in the Southeast Asia region. He concluded that greater research efforts need to be undertaken in potential areas such as non-skeletal functions of vitamin D, vitamin K, especially vitamin K2-menaquinone, interactions among fat-soluble vitamins A, D and K and the efficiency of calcium incorporation into bone formation in the context of Southeast Asia region.

Ms. Nguyen Thi Phuong Trang, Unilever Vietnam and Ms. Wei Tang, Unilever China shared the **Industry Perspective: Opportunities and Challenges in Fortification**. As part of Unilever sustainable living plan to improve the health and nutrition of consumers, food fortification is adopted as one of the key approaches to sustainable nutrition and address malnutrition. Using the systematic review outcomes on the consumption patterns of bouillon cubes, seasonings and condiments in Asia, a scenario analysis of fortifying these food vehicles with iodine and iron on micronutrient intake showed that using iodized salt and adding iron to bouillon cubes, seasonings and condiments can help to increase the intake of iron and iodine, providing approximately 33% of the RDA in Asian countries. While the study

outcome was promising, current barriers faced by the industry regarding technological challenges, additional or unnecessary costs of fortificants, and disharmonized regulations for fortified products among neighboring countries and food consumption data gaps need to be addressed in order to achieve successful implementation of fortification programs. Ensuring appropriate consumer communication and education such as providing consumer-friendly information on the fortified product was also recommended to raise consumer awareness of the need for fortified products.

#### **Session 4: Case Studies on Micronutrient Fortification**

Dr. Fabian Rohner, Groundwork, Switzerland spoke on **Iodine Deficiency: Epidemiology, Consequences and Reduction Strategies**. He pointed out that while most severe forms of iodine deficiency occurred in mountainous areas, with goiters being highly prevalent prior to the implementation of salt iodization programs, milder forms of iodine deficiency had borne negative consequences on physical and cognitive development in less prone areas in large parts of the world. Using a few case studies from different countries such as Cambodia and Uzbekistan, Dr. Rohner demonstrated variations in the iodine status of different population groups and in different geographic regions within a country. Recognizing the success of salt iodization in reducing iodine deficiencies over the past decades, he emphasized the important to channel focus on enhancing commitment towards law enforcement and monitoring, not only on table salt but also salt in processed foods and providing a more comprehensive and inclusive legal framework to address the changing dietary pattern in the region to ensure sustainability of salt iodization programs.

Bringing the focus to **Iodine Fortification of Salt and Seasoning Sauces in Thailand**, Prof. Visith Chavasit, Institute of Nutrition, Mahidol University (INMU) discussed the technical challenges encountered in production, process and quality control prior to the adoption of Universal Salt Iodization (USI) strategy, which specified an iodine level of 20-40ppm iodine in iodized salt and use of iodized salt as the raw material for the manufacturing of fish sauce and soy sauce in the country. To overcome technical complications while ensuring the production process is economically feasible, Thailand FDA and INMU jointly developed operation-friendly and affordable machinery for small and medium scale salt producers. For the iodization of fish and soy sauces, the industry is permitted to fortify their finished products instead of using iodized salt for fermentation. In-line quality assurance is encouraged for salt and sauce producers considering the high cost and lack of technical support for quality control of finished products. He highlighted the importance to localize and modify fortification processes based on sound scientific knowledge to ensure practicality whilst ensuring fortificant levels verified with standard analytical methods fall within the acceptable range.

Dr. Kyla Whitfield, Mount Saint Vincent University, Canada spoke on **Thiamine and Riboflavin as Key Candidates for Fortification in Southeast Asia: A Case from Cambodia**. She noted that unlike other micronutrients, thiamine is a suitable fortificant of choice in Cambodia because there are no technological, sensory or safety issues when added to a single food vehicle. From her research findings, she demonstrated the potential of thiamine-fortified fish sauce in preventing infantile beriberi in Cambodian women undergoing pregnancy and early lactation from a randomized clinical trial. Dr. Whitfield also presented an ongoing dose-response study which aims to formulate a thiamine-fortified salt for future use in Cambodia. The research will continue to look into the impact of various doses of maternal thiamine on markers of infant cognitive development and the dose of

thiamine required by lactating women to achieve optimized thiamine concentrations in their milk. She concluded by calling for greater attention to the two micronutrients given the recent evidence showing the negative effect of sub-clinical thiamine deficiency in early life on cognitive development and function, and the low riboflavin status in Cambodia and Malaysia and its role in anemia.

Dr. Yukiko Nakanishi, ILSI Japan Center for Health Promotion, Japan presented her research study on the **Introduction of Fortified Rice into the Canteen for Cambodian Female Workers** with the objective to improve productivity and micronutrient status among Cambodian women. Multi-micronutrients-fortified rice (MMFR) containing appropriate levels of folic acid, zinc and vitamin B1 set based on WHO-WFP-DSM recommendation and nutrition education sessions were provided to the reproductive-aged female workers. The 12-week double-blinded randomized trial elucidated that the introduction of fortified rice had resulted in an increase of serum folate concentration in proportion to the frequency of intake of fortified rice in the intervention, suggesting that rice fortification may contribute to a reduced risk of neural tube closure failure in neonates. An increase in absolute and relative presenteeism score in the fortified group may also contribute to better productivity. Dr. Nakanishi shared that a scale-up project of the fortified rice introduction into the workplace in Cambodia will be entering into the second phase and the current research will be submitted to the international scientific journal for publication.

The last presentation on **Flour and Rice Fortification in Indonesia** was given by Dr. Siti Muslimatun, ILSI SEA Region Indonesia Country Committee, Indonesia who presented on behalf of Dr. Yuni Zahraini, Ministry of Health Indonesia. She highlighted that the country is currently experiencing a triple burden of malnutrition, with an alarming rate of almost 50% of the pregnant women being anemic due to iron deficiency. While salt, flour and palm oil fortification regulations have been introduced in the country, there remain challenges in technology and producer's capacity, regulation implementation, monitoring and evaluation and availability of domestic fortificant. Dr. Muslimatun further elaborated on the progress of rice fortification development in the country. She revealed that the acceptance study on fortified rice had been well received and the impact evaluation study led to a reduction of anemia by 50% in pre-schooler and about 30% in reproductive women. Given the positive outcomes, efforts to increase domestic premix production capacity have been made. She added that premium rice "FORTIVIT" was recently launched in September 2019 by the Indonesian Bureau of Logistics and is currently sold on e-commerce. Non-premium fortified rice which will also be developed to target on the underprivileged people through non-cash food aid.

### **Conclusion:**

This seminar had helped to identify evidence for food fortification effectiveness, challenges, and potential strategies to chart an effective and sustainable future of food fortification in Southeast Asia. It identified regulatory monitoring, enforcement, and ensuring effective coverage and equity in access to fortified food as critical areas that were proven challenging to ASEAN. Limited funding and capacity, as well as a lack of multi-sectoral coordination and communication, further impeded the current progress of food fortification. While broad-reaching recommendations were synthesized to address these barriers, increasing multi-stakeholder collaboration with well-aligned objectives and creating government commitment formed the key pillars and should be prioritized to expand and improve food fortification programs in Southeast Asia.

## Faculty Members' Biographies



**Mr. Geoffry Smith** is President of ILSI Southeast Asia Region based in Singapore, and a Member of the Executive Committee of the global ILSI Board. In addition, he is the Chairman of the Essential Micronutrients Foundation, a non-profit organization which addresses micronutrient deficiencies globally as a public health issue. He is also Director of Nutrition Strategies International which deals with food and nutrition issues in developing countries. In addition, he serves as a Member of the editorial board of the journal, Food and Nutrition Bulletin. Prior to his current positions, Mr. Smith was the Global Director, Health Chelates for Akzo Nobel Functional Chemicals, and directed the global business for these compounds in food and nutrition as well as pharmaceutical applications. He was responsible for the global project within Akzo Nobel addressing iron deficiency anemia. In addition, Mr. Smith directed the Asia Pacific activities for Akzo Nobel's Innovation Unit. He is a thirty-year veteran of the chemical industry in the Asia Pacific and has resided in Singapore for more than 20 years. He is a Member of the Nutrition Society of the UK, the American Society of Nutrition and the American Chemical Society.



**Dr. Regina Moench-Pfanner** is Founder and CEO of ibn360, Singapore, a consulting firm specializing in food, nutrition and health. She has 30 years' experience leading development and nutrition programs in emerging markets. She began her career with the International Federation of the Red Cross and Red Crescent, leading major relief operations in Africa and Eastern Europe before moving into development to improve nutrition through public-private-civic initiatives focusing on large scale food fortification while working at the Global Alliance for Improved Nutrition (GAIN). Dr. Moench-Pfanner has published and co-authored over 60 peer-reviewed papers and has dedicated her career to bringing nutritious foods to those in need, specifically to the lower-income consumers who have to survive on small budgets. She is a widely recognized thought leader in the complex field of nutrition and the linkages between agriculture and nutrition. She also delivers key presentations and moderates at international conferences. Dr. Moench-Pfanner is a Fulbright Scholar who holds an M.Sc. in International Nutrition, Michigan State University, USA and a Doctorate from the University of Bonn, Germany.



**Assoc. Prof. Pattanee Winichagoon** is Senior Advisor to the Institute of Nutrition, Mahidol University (INMU), Thailand. Her work in the area of maternal and child micronutrient status, micronutrient intervention and community-based nutrition are well-regarded and she has provided advice and consultation to various agencies, such as WFP, UNICEF-EAPRO and AUSAID projects, to name a few. She has also published numerous peer-reviewed articles and monographs. Assoc. Prof. Winichagoon was the Vice-Chair of the Scientific Committee for the 19<sup>th</sup> International Congress of Nutrition held in Bangkok in 2009; co-chair of Local Organizing Committee of the forthcoming 5<sup>th</sup> Micronutrient Forum Global conference to be held in Bangkok, March 2020. She obtained her M.Sc. in Nutrition from University of Hawaii and Ph.D. in International Nutrition from Cornell University, USA.



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Health, USA.

**Ms. Dora Panagides** is Team Leader for the EC-funded Food Fortification Advisory Services (2FAS), implemented in partnership between Landell Mills and the Global Alliance for Improved Nutrition (GAIN). Dora has over 25 years' experience in international nutrition. Before joining 2FAS, Dora served as Food Fortification Advisor at the World Food Programme headquarters and as Senior Food Fortification Manager at GAIN in Geneva. Before joining GAIN, she worked extensively in Asia and Africa where she served as Deputy Regional Director for Helen Keller International and was their Country Director in Bangladesh, Cambodia and Zimbabwe. She holds M.Sc. in Health Science from the Johns Hopkins Bloomberg School of Public



**Ms. Becky Tsang** is Project Manager for the Global Food Fortification Data Exchange (GFDx) Secretariat, USA. She has dual roles at the Food Fortification Initiative (FFI) as the Technical Officer in the Asia Pacific Region and global focal point for rice fortification and also consults with the Iodine Global Network (IGN) as the program manager of the Double Fortified Salt consultation. Ms. Tsang's experience in fortification includes landscape analyses to identify opportunities for fortification and providing technical support to governments and partners in Asia planning, implementing, and evaluating cereal grain fortification.

Prior to her roles with the GFDx, FFI, and IGN, Ms. Tsang was a fellow at the US Center for Disease Control and Prevention's National Center for Birth Defects and Developmental Disabilities. Her work focused on translating evidence into recommendations and policy to eliminate folic acid preventable birth defects. She holds a Bachelor of Arts in Mass Communications and a Master of Public Health with a focus in global public nutrition.



**Mr. Steve Orr** is Partnership Coordinator at HarvestPlus based in Hanoi, Vietnam. He manages the Partnership for Biofortification between HarvestPlus and the Global Alliance for Improved Nutrition (GAIN), working to commercialize 9 biofortified staple crops in 6 countries across Asia and Africa. He is also an International Development Industry Thought Leader, Program Manager and Consultant with over 25 years of experience work in Africa, the Middle East, and Asia championing global initiatives that address food security issues impacting the world's most vulnerable populations.

Prior to that, he served as team leader for the UK AID funded FoodTrade for Eastern and Southern Africa programme facilitating improved trade in staple foods in 9 African countries. Mr. Orr is also a former USAID Foreign Service Officer serving as a Director for Agriculture in two USAID Missions. He is passionate about improving the availability and access of nutritious foods through better collaboration between development industry donors/practitioners and the private sector.



**Dr. Siti Muslimatun** is the Faculty of Food Science Study Program at the Indonesia International Institute for Life Sciences (i3L), Indonesia. Prior to her current role, Dr. Muslimatun was the Head of Department, Food Science study program at i3L between January 2015 and August 2018. Her previous work was as the Acting Chief Operating Officer of SEAMEO RECFON and the Program Director of the centre's South East Asian Nutrition Leadership Program (SEA-NLP) from 2002 to 2008. Her current areas of expertise and interest include food science, community nutrition, food security and public health nutrition. Dr. Muslimatun has authored several articles published in peer-reviewed journals, and she has also participated in several research projects as well as community nutrition projects. She was a Member of the Cost of the Diet Study in Indonesia commenced by the World Food Program. She was the Principal Investigator for the Food and Nutrition Survey in Timor Leste, and the SEAMEO RECFON coordinator in the Sustainable Micronutrient Interventions to Control Deficiencies and Improve Nutritional Status and General Health in Asia (SMILING) project. Dr. Muslimatun received her B.Sc. in Engineering in Agricultural Technology from Gadjah Mada University, Indonesia. She received her M.Sc. in Nutrition from the University of Indonesia, Indonesia, and her Ph.D. in Nutrition, Food Technology and Biotechnology from Wageningen University, the Netherlands.



**Emeritus Prof. Corazon Barba** is Professor Emeritus of the Institute of Human Nutrition and Food of the College of Human Ecology, University of the Philippines Los Baños, Philippines. She is also a visiting faculty of the SEAMEO Regional Center for Food and Nutrition, University of Indonesia. She currently serves as a Nutrition Consultant of the World Food Programme Philippines, and was the Resident Advisor of A2Z Philippines, the USAID Micronutrient Project, from 2006 to 2011. Prof. Barba was the Director of the Food and Nutrition Research Institute of the Department of Science and Technology, Philippines from 1998 to 2004. She was also past President of the Nutritionists-Dietitians' Association of the Philippines, and the Philippine Association of Nutrition. Prof. Barba presently sits on a number of important food, nutrition and health committees in the Philippines. She is also an IUNS Fellow and a recipient of the Asia-Pacific Clinical Nutrition Society Award in 2006. Prof. Barba received the Presentacion Perez Award, the highest nutrition-dietetics award in the Philippines, in 2011.



**Ms. Bui Hoang Anh** is Official of the Regulatory Affairs and Inspection Division, Vietnam Food Administration under the Ministry of Health, Vietnam. Ms. Bui is currently responsible for developing legislative documents such as Food Safety Law, decree for elaboration of food safety law, decree on food fortification, good labels and circulars. She has also conducted inspection activities on food safety and hygiene at the national level. At the international level, she is currently involved as a member of the ASEAN working group on Food Safety-Cluster 4, of Product Working Group on Prepared Foodstuff (PFPWG). She received her degree in biotechnology and food technology from Hanoi University of Technology and an M.Sc. in Biotechnology from the same university in 2004.



**Ms. Pauline Chan** is the Director of Scientific Programs for the Southeast Asian branch of the International Life Sciences Institute (ILSI), a global non-profit organization that seeks to improve public health through the advancement of science in the areas of nutrition and food safety. ILSI SEA Region is headquartered in Singapore and covers the 10 ASEAN countries, Australia and New Zealand. Ms. Chan has extensive experience in developing scientific programs and facilitating dialogue between scientists, government regulators, and industry to address regional and international issues in nutrition, food safety and health. She is a registered dietitian (RD) with the Academy of Nutrition and Dietetics. Ms. Chan received her M.Sc. in Nutrition and Dietetics from New York University, USA, and her B.Sc. in Chemistry from the Chinese University of Hong Kong.



**Dr. Tran Thuy Nga** is Head of Department of Micronutrients, National Institute of Nutrition, Hanoi, Vietnam. She has studied on intervention solutions for malnutrition in mothers and children, specializing in micronutrient deficiencies, notably vitamin A, iron and zinc and focused on applications of nutrition and food sciences in supporting nutrition-related diseases and community health care. Dr. Nga has been the principle investigator for various projects to test the efficacy and effectiveness of interventions to improve the nutritional status of pregnant women, infants and school children. She has published 95 articles on National and International scientific journals. She graduated from Hanoi Medical University as a medical doctor and obtained her Ph.D. in Nutrition at Institute of Nutrition, Mahidol University, Bangkok, Thailand with the scholarship from the International Nutrition Foundation and Ellison Medical Foundation in 2008. Dr. Nga has been working as a researcher at the National Institute of Nutrition and as a visiting lecturer for Hanoi Medical University.



**Ms. Nguyen Thi Phuong Trang** is Foods and Refreshment Research & Development Manager of Unilever Vietnam International Company Limited, Vietnam, responsible for the deployment of Unilever R&D program to make sustainable living a commonplace in Vietnam. Ms. Trang has 22 years of working experience in Research & Development for foods, tea and ice cream products for Knorr, Lipton, Wall's brands respectively. She also has hands-on experience in food fortification and efficacy studies.

In 2012, she was involved in a project on "National Strategies for Food Fortification", a collaboration between Unilever Vietnam and the National Institute of Nutrition, Vietnam. As the pioneering business in this meaningful project, Unilever Vietnam has conducted extensive research and launched "The Knorr Meaty Granule - fortified with Vitamin A" in 2013. With the new formulation, Knorr granules guarantee not only the rounded taste of dishes with 3 premium ingredients (shinbone, tenderloin & marrow) but also provide benefits to family health with the addition of Vitamin A. In addition to the new product launch, Unilever Vietnam has also intensified its PR activities against micronutrient deficiency to help consumers become more aware of the importance of micronutrients in the daily diet. In 2016, iodized salt was studied and used in all Unilever Vietnam products according to Vietnam regulation.



Ms. Tang supports Unilever's external nutrition and health-related programs and collaboration across Asia. She has 12 years of working experience in Research & Development at various positions related to Nutrition & Science, Product Development and Scientific Affairs in France and China. She joined Unilever in 2017 as Regional Head of Nutrition External Engagement for North Asia and expanded her responsibility to Southeast Asia and Australasia (SEAA) region from 2018. Ms. Tang obtained her M.Sc. in Biology and Innovation in Quality and Productions of Vegetable respectively at University Paris XIII and University Paris XI.

**Ms. Wei Tang** is Regional Head of Nutrition External Engagement (Asia) of Unilever China Company Limited, China. Ms. Tang supports Unilever's external nutrition and health-related programs and collaboration across Asia. She has 12 years of working experience in Research & Development at various positions related to Nutrition & Science, Product Development and Scientific Affairs in France and China. She joined Unilever in 2017 as Regional Head of Nutrition External Engagement for North Asia and expanded her responsibility to Southeast Asia and Australasia (SEAA) region from 2018. Ms. Tang obtained her M.Sc. in Biology and Innovation in



Prof. Hop received her M.D. at Tashkent Medical College and her M.S. in Community Nutrition and Ph.D. in Nutrition from SEAMEO, University of Indonesia, Indonesia.

**Prof. Le Thi Hop** is currently the President of Vietnam Nutrition Association (VINUTAS), Vietnam and was formerly the Director of the National Institute of Nutrition (NIN), Vietnam. Prior to her position as Director of NIN, Prof. Hop worked within the National Institute of Nutrition for a number of years in various roles, including Head of Maternal and Child Nutrition. Her areas of research interest include nutrition, growth and physical development of children from birth to 17 years old, interventions to reduce stunting of children under five, nutritional status and anemia in pregnant and women of reproductive age, multi-micronutrient supplementation of young infants, and the effects of iron fortification of rice and fish sauce on anemia in female workers. Prof. Hop received her M.D. at Tashkent Medical College and her M.S. in Community Nutrition and Ph.D. in Nutrition from SEAMEO, University of Indonesia, Indonesia.



**Dr. Fabian Rohner** is an International Nutrition and Public Health Specialist of Groundwork, Switzerland. In his current position at GroundWork, he serves as the study sponsor of two large clinical trials investigating the impact of combined agriculture, nutrition and WASH intervention package on health and nutritional status in young children as well as in pregnant women and their offspring in Western Kenya. Also, he has recently completed a validation study of quantitative rapid methods to analyze the salt iodine content. Further, he is the principal investigator or technical lead on national micronutrient surveys in Africa and Asia, some of which include iodine status assessment.

Dr. Rohner focuses on the design and management of impact evaluations for large-scale food fortification and infant and young child nutrition programs. He is also a member of the US National Institute of Health's 'Biomarkers of Nutrition for Development' iodine expert panel, the US CDC 'Biomarkers Reflecting Inflammation and Nutritional Determinants of Anemia' initiative and serves on the technical advisory panel of the 'Power of Nutrition'. He has conducted clinical trials related to the prevention and treatment of malaria, helminths and micronutrient malnutrition in West Africa, as well as multiple research studies around iodine nutrition.



**Prof. Visith Chavasit** is Faculty Member at the Institute of Nutrition, Mahidol University, Thailand. During 2007-2015, he was the Director of the Institute of Nutrition, Mahidol University. His research interests are on food fortification and health food product development which allowed him to serve as a consultant for many international organizations such as ICCIDD, World Bank, GAIN, UNICEF as well as Thailand's Food and Drug Administration. A number of his innovations and developments have been adopted for commercialization and national policies. He graduated with Ph.D. in Philosophy and in Food Science from the Department of Food Science and Technology, Oregon State University, USA.



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**Dr. Kyly Whitfield** is Assistant Professor in the Department of Applied Human Nutrition at Mount Saint Vincent University in Halifax, Canada. She leads the Milk and Micronutrient Assessment (MAMA) Lab, which aims to explore several facets of maternal and infant feeding and nutrition ([www.mamalab.ca](http://www.mamalab.ca)). She is passionate about nutrition in the first 1,000 days, from conception to two years; she co-edited *The Biology of the First 1,000 Days*. A major focus of her research program is identifying culturally appropriate public health interventions to combat micronutrient deficiencies in low-resource settings, which currently includes the exploration of fortification to address thiamine deficiency among breastfed infants in Southeast Asia. Her previous work explored fish sauce as a fortification vehicle in Cambodia. Another focus is studying infant feeding behaviors, and the potential long-term effects of early feeding on eating patterns and disease risk later in life. She was awarded the inaugural Mount Saint Vincent University [Early Career Research Award](#) this year.



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**Dr. Yukiko Nakanishi** is Consultant of ILSI Japan Center for Health Promotion who helps international projects to improve the workplace nutrition in South East Asian countries. Before working as a consultant of ILSI Japan CHP, Dr. Nakanishi worked as a Professor of Nutrition at University of Human Arts and Sciences, Koshien University, and Showa Women's University. Since 1998, she has closely collaborated with National Institute of Nutrition, Vietnam, to develop and implement iron-fortified fish sauce and micronutrients-fortified rice. At present, she has been coping with the multi-micronutrient fortified rice through workplaces in Cambodia with collaboration with RACHA (Reproductive and child health