

Reflections on ILSI and ILSI Japan

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I am pleased to have been invited to share some reflections on my time with ILSI and the many fruitful interactions that I had with ILSI Japan during my nearly 29 years with the organization. I joined ILSI in 1989, after spending nearly three years as political appointee with the U. S. Department of Agriculture. Dr. Jack Filer, a renowned pediatric researcher and at the time Executive Director of ILSI, interfaced with my office at USDA, which was responsible for the nutrition programs supported by the federal government. We became friends and he recruited me to join ILSI.

By the time I arrived at ILSI, ILSI Japan was a thriving branch of ILSI, the first outside of the U.S. For example, under the leadership of Dr. Tetujiro Obara, ILSI Japan partnered with the ILSI Research Foundation's Pathology and Toxicology Institute. Under the leadership of Dr. Malaspina, Dr. U. Mohr (Germany), Dr. T. C. Jones and others, the Path/Tox Institute initiated a series of training sessions for pathologists from government regulatory agencies, academia and industry to ensure that these scientists in Japan, U.S. and Europe read frozen tissue sections in the same way. This work was critical to harmonization of toxicology testing worldwide. It was an excellent example of why the ILSI model is valuable for improving food safety. More recently, working with Japanese MAFF, ILSI Japan continued the harmonization work by collecting information on food safety regulations throughout Asia and compiling this useful information into a database.

My own interaction with ILSI Japan began shortly after I took on the role of Executive Director of the ILSI Research Foundation's Human Nutrition Institute (HNI). I was charged with developing a research program on nutrition and aging, with funding from the Heinz Family Foundation. ILSI Japan was also interested in this topic because of the country's large elderly population. Arriving Tokyo for my initial visit with ILSI Japan in the fall of 1990, I took the first day to visit beautiful sites in the city, being careful to remember where my hotel in the Ginza district was. This was long before smart phones and Google maps. The Imperial Palace gardens were lovely even in the steady rain that was falling – the last gasp of a typhoon that had recently passed. My reason for coming was to begin the planning for the First International Conference on Nutrition and Aging. This was easily accomplished and I was treated to a lovely dinner with Kobe beef – long before such a treat was known in the US. My very gracious host was Dr. Obara, a very dear friend of ILSI's founder, Alex Malaspina, and I was honored to have met him. Partnering with ILSI Japan was a very effective way for HNI to become involved in this important public health area, one that ILSI is once again addressing through the One ILSI Healthy Aging program. HNI worked closely with ILSI Japan to organize the Second International Conference on Nutrition and Aging in September 1995, held at Showa University where Dr. Shuichi Kimura was a professor. Dr. Kimura served as a volunteer leader of ILSI Japan for many years. Not only an excellent scientist, Dr. Kimura is also a gifted painter and I enjoy the lovely prints of his paintings that he shared with me over the years. HNI continued to support the nutrition and aging conferences through 2003, and ILSI Japan continued them through 2015. Mr. F. Fukutomi, former Executive Director of ILSI Japan, served as my guide during several of my visits to Tokyo. His height made me feel

comfortable on the Tokyo subway, as I could see him even when we were separated by the crowds. He took me to temples and museums and to neighborhood restaurants to try various Japanese dishes. I think it was during my first trip that I and another American scientist who was also visiting rose well before dawn to visit the big Tokyo fish market. It was quite an adventure with many live creatures from the sea I had never seen up close before.

Beginning in about 1991, the ILSI Human Nutrition Institute managed two micronutrient programs for the U.S. Agency for International Development – the International Vitamin A Consultative Group (IVACG) and the International Nutritional Anemia Consultative Group (INACG). I became very interested in food fortification as an effective way to prevent both vitamin A and iron deficiency anemia. Finding a bioavailable form of iron was a major challenge. Working with several ILSI branches, HNI began to encourage them to focus on food fortification. Through INACG, new research was reported on the use of sodium iron EDTA as a bioavailable form of iron that could be very beneficial for people consuming largely plant-based diets. HNI helped prepare a submission to the Joint FAO/WHO Expert Committee on Food Additives (JECFA) seeking a favorable review for the safety of this compound and was successful. HNI also worked with FAO to include food fortification in a FAO publication on ways to address micronutrient malnutrition. In the late 1990's, several ILSI branches in Asia began focusing on food fortification as a valuable tool for these important public health problems.

ILSI Japan took the lead in this area in partnership with the new ILSI Center for Health Promotion (CHP), based in Atlanta. Mr. T. Togami deserves significant credit for making real progress in controlling iron deficiency anemia in women of childbearing age and young children in several southeast Asian countries through Project IDEA (Iron Deficiency Elimination Action). Beginning in Vietnam, Mr. Togami built a strong partnership with the Vietnamese National Institute of Nutrition and a research base on the efficiency and effectiveness of sodium iron EDTA as a fortificant in fish sauce. He also worked with the ILSI Focal Point in China to study the use of soy sauce as the vehicle for delivering this bioavailable form of iron. GAIN (Global Alliance for Improved Nutrition), a Gates Foundation funded group, was so impressed with this work that they provided funding to take the pilot work to national scale in both Vietnam and China. This effective fortification program is underway in Cambodia, as well. The ILSI Japan Center for Health Promotion is also exploring rice fortification with other forms of iron in The Philippines. The health of millions of women and children have been improved as the result of this work.

HNI and ILSI Japan worked together on other topics as well. Obesity became the central nutrition issue during the 1990's and 2000's in all parts of the world. HNI began a small grants program to better understand the role of carbohydrates in health. ILSI Japan held a conference on glycemic carbohydrates and health in 2001, with HNI as a partner. ILSI Japan continues to support physical activity and nutrition, especially among the elderly through TAKE10!.

ILSI Japan has been a stalwart supporter of ILSI's scholarly journal, *Nutrition Reviews*, and the textbook, *Present Knowledge in Nutrition*, for many years. The branch translates some of the articles published in *Nutrition Reviews* into Japanese and re-publishes a Japanese version of the journal for local distribution. ILSI Japan also translated several editions of *Present Knowledge in Nutrition* into Japanese for publication in conjunction with ILSI's publishing partner. These actions helped ILSI widen the distribution of the important knowledge contained in these scholarly publications. More recently, ILSI's focus has been on increasing collaboration among the ILSI branches to better leverage the organization's resources, financial and manpower. ILSI Japan has been a leader in this arena as well through

their leadership in the BeSoTo effort. Bringing together the leadership of ILSI Japan, ILSI Korea, and ILSI Focal Point in China has fostered cross-branch activity in this geographic region. ILSI Southeast Asia Region and ILSI Taiwan participate in these meetings now as well, making BeSoTo a model for the One ILSI strategy going forward.

In 2005, I was honored to be invited to serve as Executive Director of ILSI and my primary focus shifted from nutrition research topic to strengthening the global ILSI network. ILSI Japan has been an excellent partner in these endeavors, too. From Mr. Fukutomi on through Mr. H. Hamano, Dr. Ryuji Yamaguchi, and Mr. Atsushi Uzu, all of the ILSI Japan leaders have been important contributors to the strengthening of the global ILSI network. Now with ILSI Japan's Dr. Takeshi Kimura elected as the ILSI Vice President, I expect ILSI Japan to continue to lead within the ILSI network.

From its beginning in 1981, ILSI Japan has been a leader within the ILSI family and the scientific community in Japan and surrounding countries. ILSI Japan has been successful in demonstrating the value ILSI brings through its tripartite approach of involving scientists from industry, government, and academic to addressing critical public health issues in food safety and nutrition, among others. The ILSI model, which is also an example of public-private partnership, is needed even more today to bring the best scientific knowledge and practice to bear on public health issues. By working together, much more can be accomplished than when such interaction is missing.

It has been a distinct honor for me to work with scientist associated with ILSI Japan, both as the Executive Director of the ILSI Research Foundation Human Nutrition Institute and as Executive Director of ILSI. Together, we have contributed to providing science that improves human health and well-being and safeguards the environment – ILSI's mission. I have no doubt that ILSI Japan will continue to undertake important work to improve public health and well-being for people in Japan and neighboring countries for many years to come.

Difficulties and Challenges in Food Analysis

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<Summary>

Since analysis of foods involves a wide variety of compositions and matrices, no single method is adequate to measure the same target substance in a variety of foods. However, considering the analytical results play an important role in food safety and security, comparability and reproducibility of results must be maintained in order to ensure the validity of the evaluation. In other words, it is necessary to ensure all factors necessary for validity such as consistency, unbiasedness, and robustness that does not vary by laboratory or the specific analyst. For this purpose, the validity of the analytical method and the skill of the analysts are vital as well as analytical standards and reference materials which act as a standard for comparing measurements. This necessity has led to the development of various rules including Codex, analytical standards and references, guidelines for collaborative studies and proficiency testing. But in the course of the establishment of these, there are many obstacles and hurdles to overcome such as cost, time, human-networking, etc. Thus, these are often implemented as part of a national strategy or international collaboration.

In addition, there are additional problems specific to nutrition measurement which directly relates to human health, since these methods have been used for many years and are empirically valid and convenient. In this paper, after overviewing the history of food analysis, I introduce examples of tasks and circumstances related to on-site analysis for nutrition labeling. Although it is currently assumed that measurement does not provide a completely accurate value, an accurate food-analysis-result is the first step towards a safe and healthy diet. Believing that it will lead to the improvement of people's quality of life, we as food analysts would like to make every effort to contribute to the development of new and improved testing and inspection technology.

Food Safety Situations in China and Expectations

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Over the past 30 years, China - as a developing country with a huge population and large geographical heterogeneity - has made a big leap from a shortage of food to basically the elimination of hunger. However, there is an obvious conflict between the traditional agriculture farming and numerous small food businesses and the increasingly stronger consumer demand for a safe, high-quality food supply.

What is the food safety situation in China? The answers may vary depending on who answers the question. Most Chinese consumers would say the situation is “very bad, lots of problems” and there is no significant improvement in the recent years. The scientific assessment of food safety situations in China could be based on the following three criteria, i.e. compliance rates in national food sampling/testing programmes, national food control system and application of risk analysis framework.

As shown in Table 1 and 2, the total food compliance rate has been increased from 71.3 % to 96.8 % in the last 30 years and compliance rates of all the 6 major food categories (mostly consumed, including high risk categories with special safety concern) were also steadily increased. Although these data points are not scientifically comparable due to changes in food safety standards and laboratory testing methods during the 30

years, considering the sample size of each of the data points was large and the number of data points, the trends of improvement are convincing.

In the last 30 years, the national food control system in China has been changed from single ministry (Ministry of Health) to fragmented management by as many as more than 10 ministries. The situation was “when there is no problem, every ministry is in charge; but when there is a problem, no ministry is in charge”. Obviously, there are lots of loopholes in this fragmented food control system. A typical case was the 2008 melamine issue, which caused around 300,000 cases of kidney diseases in infants and young children. Since 2013, the fragmentation issue was significantly improved by consolidating the responsibilities to the following ministries: Ministry of Agriculture (MOA) responsible for the control of primary agricultural products, General Food and Drug Administration (CFDA) responsible for processed products from manufacture to distribution (including restaurants), National Health and Family Planning Commission (former Ministry of Health, MOH) responsible for monitoring/surveillance, risk assessment and food safety standard and General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) responsible for food import and export control. Although there are still rooms for further improvement, it basically solved the fragmentation problem. At the same time, the Food Safety Law was promulgated in 2009 to replace the Food Hygiene Law and it was further revised in 2015 based on the risk analysis framework. The outstanding improvement is the change from “catching thieves to preventing from theft”.

After 2009, the national food hygiene standard system was also changed to the food safety standard system which has integrated the three different and conflicted mandatory national food standard systems (i.e. food hygiene standard, food quality standard and agriculture

product quality and safety standard) into one national food safety system by the end of 2015. The new standard system is basically in line with the Codex system and is significantly

improved in coverage, scientific basis and feasibility.

The application of risk analysis framework was advanced from lack of awareness to basic understanding (after China joined WTO) and recently to primarily application. Significant progress was made in national food contamination monitoring and food borne disease surveillance and risk assessment, but risk communication is the weakest part.

However, it should be noted that China is still a developing country and there are many food safety issues in China. Surveillance and control on microbial foodborne illness are weak and food borne diseases is still the number one food safety issue in China. Main issues of chemical contamination of food are heavy metals (lead, cadmium) in grains and vegetables, mycotoxins in grains and nuts, illegal use of veterinary drugs in livestock, and illegal use of pesticides in vegetables and tea. Food fraud is quite common at present and resulted in serious damage in consumer confidence in the food supply. Risk communication is facing great challenge. Food scary due to misconception is common. The importance of psychological harm to consumers caused by misinformation and misconception should not be ignored.

The Chinese government attaches great importance to food safety as one of the top priorities in the government agenda. Future directions for further improvement are: Food producers and handlers should ensure food safety in the whole food chain, i.e. from farm to table. The leading enterprises have the responsibility to help the upstream and downstream small and medium size enterprises (SMEs), so that the possible loopholes could be avoided. The government regulatory agencies must strengthen cooperation among different agencies to achieve integrated seamless control of the whole food chain.

Both food producers/ handlers and the government have a responsibility to meet consumer demands and ensure food safety. The only way to steadily improve the food safety situation in China is to follow the risk analysis framework by the joint efforts of all stakeholders. With the new Food Safety Law of 2015 put into place, it is believed that the food safety in China will steadily improve.

Reference

Junshi CHEN and Zhiqiang ZHANG, in: Chapter 2. Food Safety in China: Science, Technology, Management and Regulation. Ed. By JS Jen, J Chen (2017). Wiley, May 2017, ISBN: 978-1-119-23796-9.

< Research Institute of ILSI Japan Members >
NAGASE & CO., LTD. Nagase R&D Center:
Unavailable Made Available-A New Era with Biotechnology

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<Summary>

Nagase R&D Center was established for the purpose of strengthening Nagase's mission. To carry out our mission, we need to gather and evaluate the constantly-evolving frontier technologies and use these technologies to create added value to return and serve our society. Along 27 years' history, Nagase R&D has played various roles and shifted our focus several times in order to meet the global needs and create greater value for the society as a whole of Nagase Group. In 2013, the Center restarted with a new mission. Since then, in order to meet the demand for establishing a world-wide bioeconomy society, we have been using our core technology, i.e. the *Streptomyces* strain design and fermentation technology (N-STePP®) and related technologies, to produce naturally-existing rare functional substances. Those substances are difficult to produce by usual synthetic methods. Our goal is "Process Innovation", or in a literary sense, "Unavailable Made Available". To give some examples, a UV absorbing agent from algae (mycosporine-like amino acid), a protein that exists in human and animal blood (Ferritin), a multifunctional rare amino acid from mushrooms and wheats (ergothioneine) and unique *Streptomyces* originated ingredients and etc. We are dedicating ourselves to develop these materials for food, functional food, cosmetics and industry in the future.

Report of the 39th Session of the Codex Committee on Nutrition and Foods for Special Dietary Uses

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<Summary>

The 39th Codex Committee on Nutrition and Foods for Special Dietary Use (CCNFSDU) was held in Berlin, Germany from 4 to 8 December 2017. The Committee agreed to the following matters.

- (1) Matters for CAC41 adoption (step 5)
 - Review of the standard for Follow-up Formula (Proposed draft Essential composition requirements for older infants and young children) [Agenda 4]
To forward the essential composition requirements for older infants and young children to Step 5 for adoption by CAC41.
- (2) Matters of each agenda items (step 3)
 - Proposed draft Claim for "free" of Trans Fatty Acids [Agenda 10]
To send the proposal for comments at Step 3 and further consideration at the next session.
- (3) Others on the handling of the agenda (step 2/3)
 - Review of the Standard for Follow-up Formula (scope, product definition, labelling) [Agenda 4]
To re-establish the EWG and to review the standard for Follow-up Formula and the product for young children:
Scope, Definition, Labelling requirements, and Name of product for young children.
 - Proposed draft definition for biofortification [Agenda 5]
To re-establish the EWG and to re-create the draft of the Definition of biofortification (include footnote accompanying the definition, other alternative terms on biofortification) for CCNFSDU 40.
 - Proposed draft NRV-NCD for Omega-3 long chain polyunsaturated fatty acid EPA and DHA [Agenda 6]
To re-establish the EWG to evaluate scientific evidences and to re-create the draft proposal for CCNFSDU 40.
 - Proposed draft guideline for ready-to-use therapeutic foods (RUTF) [Agenda 7]
To re-establish the EWG and to re-create proposal for draft guidelines for RUTF for CCNFSDU 40.
- (4) Others on the handling of the agenda
 - NRV-R for older infants and young children [Agenda 8]
To establish the EWG to evaluate the necessity of NRV-R setting, and to create the draft proposal for CCNFSDU 40.
 - Mechanism / framework for considering the technological justification of food additives [Agenda 9]
To re-establish the EWG and to re-create the mechanism or framework proposal for

- CCNFSDU40 taking into account the comments in CCNFSDU39.
- Harmonized probiotic guidelines for use in food and dietary supplements [Agenda 11]
To prepare a discussion paper for consideration at CCNFSDU 40.
 - General guidelines to establish nutritional profiles [Agenda 11]
To discuss this item at the next session (CCNFSDU 40).