



<i>Contents</i>	Page
Report of the Symposium on "Nutrigenomics for Assessment of Food Functions"	1
Report of the First ILSI BESETO Meeting	1
ILSI Japan 2009 Activities of Research Committee	
Nutrition and Health	2
Food Safety	2
Food Functionalities	3
Activities of CHP	4
[Nutrition Reviews] Publication	5
News Flash	6
Update from the ILSI Japan office	6
Editor's postscript	6

Report of the Symposium on "Nutrigenomics for Assessment of Food Functions"

Organized by ILSI Japan-Endowed Chair of Functional Food Science and Nutrigenomics

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The symposium was held at Yayoi Auditorium, Ichijo Hall, The University of Tokyo on May 13, 2009. In this symposium, the achievements of the 1st 5-year-term activity from December 2003 to November 2008 and the outlooks for the 2nd 5-year-term (from December 2008) were presented. The symposists were composed of 8 researchers from the Graduate School of Agricultural and Life Sciences, The University of Tokyo, 3 from a public research institution and other universities, and 21 from food industry.

The symposium started with the message from Prof. Shogenji, Dean of the Graduate School of Agricultural and Life Sciences, The University of Tokyo. Next, Prof. Abe, The University of Tokyo, delivered a keynote lecture entitled "The achievements of the 1st 5-year-term and the vision for the 2nd 5-year-term of the ILSI Japan-Endowed Chair of Functional Food Genomics".

These were followed by 5 technical sessions : "Nutritional assessment using nutrigenomic approach", "Nutrigenomic studies on the functions of nutrients", "Sensory science and nutrigenomics", "Nutrigenomic studies on the functions of pre- and pro-biotics", and "Nutrigenomic studies on the functions of polyphenols".



The symposium focusing the current state of the art gathered full-house audience of 300 or more and was a great success.

Report of the First ILSI BESETO Meeting

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Chair, International Cooperation Committee
ILSI Japan



The first joint meeting of ILSI Korea, ILSI Focal Point in China and ILSI Japan was held on August 26 to 27, 2009 at the Korea University thanks to an earnest offer from ILSI Korea. During the meeting, wide-ranging discussion on food safety incidences and subsequent changes in food regulation and control systems, risk assessment framework, and possible ILSI collaboration in the region were discussed. As a result, it became clear that each country is facing the same risk communication issues including insufficient consumer recognition of science based food safety administration. To improve the consumer awareness and to support science based risk assessment and management procedures, it was agreed to establish an infor-

mation sharing system among the three ILSI bodies for emerging food safety issues. ILSI Korea and ILSI Focal Point in China also gave their willing consent to join ILSI Japan's investigation project on food commodity standards and analytical methods in Asian countries supported by the Japanese Ministry of Agriculture, Forestry and Fisheries aiming to create cooperative framework among the three countries. It was also decided that a BESETO meeting will be held biannually and the location will be determined by rotation.



ILSI Japan 2009 Activities of Research Committee

Nutrition and Health Research Committee

(1) Nutrition Task Force

The 6th International Conference on Nutrition and Aging scheduled for October 2011 will coincide with the 30th anniversary of ILSI Japan. Preparations have already begun by the committee members.

Obesity Working Group has been promoting the sale of "Obesity and Metabolic Syndrome in Japan (with English translation CD)" ILSI Japan Report Series prepared by the Obesity Working Group.

(2) Carbohydrates Task Force

Glucose Releasing Rate (GR) Working Group :

Within this task force a working group including outside members on GR was set up to technically support task force members with the development of a GR prototype. Development work on this project was carried out at Showa Women's University under the guidance of Professor Takashi Sakata of Ishinomaki Senshu University. Ring experiments began in 2007 and will last for a maximum of 3 years.

Fructose Working Group :

Published the following report in the December 2009 issue of the Journal of Japanese C council For Advanced Food Ingredients Research.

"The relationship between fructose intake and lipid metabolism with an emphasis on obesity"

Weight Control Working Group :

The efforts of this working group resulted in publication of the following

review article in J Nutritional Science and Vitaminology
55, pp201-207, 2009

"Is Glycemic Index of Food a Feasible Predictor of Appetite, Hunger, and Satiety?"

(3) Tea Task Force

This working group was founded last year and this year set up the Tea Information Working Group. In accordance with the action plan, a database for worldwide tea ingredients became a reality. Also, in October of 2010, the 4th International Conference in Tea Technology will be held by ILSI Japan, supporting International Conference on O-OCHA Culture and Science (ICOS, SHIZUOKA).

(4) Japanese Dietary Habit and Obesity Task Force

1. On February 17th, the 4th ILSI Japan Life Science Symposium will be held by the Japanese Dietary Habit and Obesity Task Force.

2. This task force will continue to survey the relationship between Japan's unique diet and obesity. The task force will also comment on the Japanese Government's food education program from the viewpoint of preventing obesity. Also, with the help of the ILSI head office and other ILSI branches, this task force will prepare a report on countering obesity worldwide.

The Variety of Traditional Fermented Foods Working Group, the Dietary Fats Working Group and the Pattern of Dietary Intake Working Group will each submit their results for publication. The combined results will then be published as a monograph.

Food Safety Research Committee - 2009 Activities Report

(1)[Toxicology Review Seminar](conducted by Food Microorganisms Task Force and the Risk Assessment Task Force)

- As scheduled, this seminar was held 6 times :

- 3rd Seminar : Shoji Fukushima, Director of the Japan Bioassay Research Center
- 4th & 6th Seminars : Eiji Wanibuchi, Professor at Osaka City University Graduate School
- 5th Seminar : Dai Nakae, (Senior??) Researcher at Tokyo Metropolitan Institute of Public Health
- 7th & 8th Seminars : Tetsuya Kamataki, Professor Emeritus at Hokkaido University

(2) Food Microorganisms Task Force

Continuing from last fiscal year, we participated in research

sponsored by the Japan Ministry of Health and Welfare (The Cause of Contaminates in Drinking Water, conducted by Yukiko Kudo, laboratory head in the Division of Microbiology at the National Institute of Health Sciences)

Task force meetings were held 5 times. Progress in the research project sponsored by the Japan Ministry of Health and Welfare and recent news in the area of microbiological food safety were discussed.

(3) Risk Assessment Task Force

Task force meetings were held 5 times. Among the issues discussed were metals in food, allergens, nanotech, etc.

Together with the CODEX Committee on Contaminates in Food and the Flavor Task Force, several study sessions were held with internal lecturers.

(4) Food Allergy Task Force

Task force meetings were held 2 times. Current information was collected, shared and discussed.

In collaboration with Professor Kosei Imai of the Sagami National Hospital, information on food allergen threshold estimates was collected.

(5) Flavor Task Force

Activities were conducted to promote the text “Toxicological Threshold Concerns”, which was translated last year.

(6) Safety Information Research Task Force

- information collected by this task force is distributed by e-mail periodically. Last year, 2 updates were distributed.

(7) Biotechnology Task Force

The Biotechnology Task Force created the following three

groups under the botany section :

A. Evaluation of the Risk of Transgenic Plants Spreading to the Environment Team (GMO and the Environment Risk Evaluation Team) : Team Leader - Tadahisa Manabe (SyngentaSeeds K.K.)

IOBC/WPRS Workshop [Assessing the environmental risks of non-pesticidal GM crops] was conducted by Professor Shinobu Sato of Tsukuba University, Graduate School of Life and Environmental Sciences. Details of this workshop were published in ILSI.

B. GMO Detection Methods Team : Team Leader - Satoshi Futo (FASMAC Co. Ltd.). Team Leader Futo conducted three lectures about GMO detection technologies, methods, etc. Preparation of a post symposium workshop are in progress. The symposium will be held February 12,2010.

C. Protein Stability and Allergy Team : Team Leader - Futoshi Kamei (Du Pont Kabushiki Kaisha) . The team leader changed hands during the this period slowing progress.

Food Functionalities Research Committee

On September 29, 2009, the Food Functionalities Research Committee reconvened. With the kind support of Yasuto Tashiro (Meiji Holdings - Meiji Seika Kaisha), Ryuji Yamaguchi and Yoko Ogiwara of Ajinomoto Co., Inc. and Yoshihisa Katsuragi of Kao Corporation, the committee met twice. The following are some of the activities. In 2010, there will be 2 or 3 meeting, after which subcommittees will be formed in order to commence the survey work. The subcommittees will be created for the following activities : 1) survey the increase in the number of known active ingredients in nutritional foods, 2) benefit-risk analysis of foods (similar to ILSI Europe’s BRAFO Project), and 3) survey functional ingredients and health claims.

<Planned Activities for Reconvened Committee> Summary

There has been a tremendous amount of activity internationally in the field of functional foods. Many new products are being developed and there are a concurrent effort explain the benefits of these products to consumers via health claims. Many countries such as the US, Canada, Korea, China, Australia as well as the European Union are in the process of establishing health claim regulations. As part of ILSI’s effort to survey food nutrition and safety world-wide, each ILSI branch plays a part in studying functional foods. Europe, America, Korea and China have put health claim regulations in place similar to Japan’s FOSHU system. Yet there remains significant dissatisfaction among consumers with current health claims and this is seen as obstructing progress in the functional food area. In order to promote progress in the area of Japanese functional food health claims, ILSI Japan proposes to renew activities related to new functional food development from a scientific perspective, including risk-benefit information.



Activities of CHP ~Project SWAN~

It is said that currently 3.5 billion people still suffer from iron deficiency anemia and its measure to prevent this anemia is very delayed. Iron is a nutrient that is essential for healthy living. The deficiency of iron impairs growth and cognitive development of children and increases the risk of death during pregnancy. In addition, it also reduces learning ability and causes lower productivity among working adults, which in turn hinders the struggle against poverty.

Project IDEA (Iron Deficiency Elimination Action) works to reduce iron deficiency anemia (IDA) in developing countries by adding iron to commonly-eaten and commercially-produced foods such as condiments and staples, based on the dietary patterns unique to each country. We select food that is eaten by low income groups and then add iron that is bioavailable and has a minimum of taste and color changes. This food fortification strategy is considered to be a mid- to long-term, cost effective solution to IDA.

A series of processes of Project IDEA takes 6 steps : 1) literature review to confirm needs, and feasibility studies including the selection of appropriate local partners, 2) storage and stability tests to confirm the stability of iron fortified foods, 3) sensory evaluations to confirm the acceptability of taste and color changes, 4) clinical trials (efficacy studies) to verify the degree of anemia improvement in specific subjects by the intake of iron fortified food over time in a controlled setting, 5) effectiveness studies to assess improvement in anemia status and the degree to which knowledge, attitudes and practices towards iron fortified foods and anemia have changed following the offering of iron fortified food through local market channels and 6) nationwide launch of iron fortified foods to prevent IDA . Currently, Project IDEA is underway in the following 5 countries.

In the Philippines, we developed and implemented technology that mixes iron (SunActiveFe) with rice flour, then passes it through an extruder to produce rice shaped premix, and finally blends it with ordinary rice to produce iron fortified rice. Reduction in anemia was confirmed through an efficacy study, therefore now we are implementing an effectiveness study in a larger population in Bataan Province.

In Cambodia, utilizing the technology established in Vietnam, we are carrying out an effectiveness study using iron (Ferrazone) fortified fish sauce and soy sauce in Kampot Province and Shiem Reap Province.

In Vietnam, an anemia prevention program using iron fortified fish sauce has been implemented as a national strategy. Simultaneously, we are utilizing the iron fortified rice technology established in the Philippines, and we are planning an efficacy study using iron fortified rice.

In India, we are planning an efficacy study using iron (Ferrazone) fortified flour (atta flour), low extraction flour which is commonly eaten by low to middle income populations.

In China, a strategy to use iron fortified soy sauce to prevent anemia is underway nationwide.

The following measures ranging from research and development to practical implementation in the field are required : 1) scientific validation of the program through basic experiments and clinical trials by universities and research institutions, 2) execution of the program and guidelines settings by public and government agencies and 3) new material and technology development, and business modeling by industries. Collaboration among academia, public and industry is important. ILSI Japan CHP is as an international NGO capable of implementing scientific programs. We are coordinating the programs from the research and development stage to the implementation of activities in the field.



Cambodia : Taking a blood sample



Philippines : iron fortified rice

India : A staff member of ILSI Japan, South East Asia Region and India



* SunActiveFe is provided by Taiyo Kagaku, co., Ltd. and Ferrazone is provided by Akzo Novel Functional Chemicals Pte Ltd.

『Nutrition Reviews』 Back Numbers

As previously announced, we have reprinted the Nutrition Reviews issues starting from November 2008.

Nutrition Reviews is a translation of the journal published by ILSI America (International Life Sciences Institute America) and provides the latest information on nutrition worldwide. In 2008, coinciding with a change in the publishers of the English edition, the distributor of the Japanese edition of Nutrition Reviews was changed from Kenpakusha to the Kagawa Nutrition University Publishing Division. The editorial mission of the journal remains unchanged, focusing on the broad scope of nutrition-

al science including medicine, health etc., as well as the increasing importance of issues related to governmental legislation and health information. The Japanese edition will continue to provide full translations of all articles of the English edition as well as summaries of other important articles. Nutrition Reviews is a high impact factor journal including reviews and analysis.

Publisher: ILSI Japan

Distributor: Kagawa Nutrition University Publishing Division

Price : 2,100円

*ILSI members should contact the ILSI at <http://www.ilsijapan.org>



17-1 No.62 Will more functions of L-Theanine be discovered?

- Psychological effects of dietary components of tea : caffeine and L - theanine L - theanine
- Intervention enhances human $\gamma \delta T$ lymphocyte function
- Nutrient profiling of foods : creating a nutrient-rich food index
- Nutrient and contaminant tradeoffs : exchanging meat, poultry, or seafood for dietary protein
- Dietary protein intake affects albumin fractional synthesis rate in younger and older adults equally
- Nutritionally regulated biomarkers for breast cancer
- Monitoring and evaluation in flour fortification programs : design and implementation considerations



17-2 No.63 The little known connection between metabolic syndrome and bone health

- Energy regulation by the skeleton
- General grains, legumes, and weight management : a comprehensive review of the scientific evidence
- Safety of probiotics : translocation and infection
- Nutrition and gastric cancer risk : an update
- Immunonutrition support for athletes
- Transcriptional switches in the control of macronutrient metabolism
- Update of on alpha-linolenic acid
- Vitamin D and blood pressure connection : update on epidemiologic, clinical, and mechanistic evidence



17-3 No.64 The current state of weight management

- Should glycemic index and glycemic load be considered in dietary recommendations?
- Intentional weight loss and mortality among initially healthy men and women
- Update on the role of vitamin K in skeletal health
- Genetic polymorphisms as determinants for disease-preventive effects of vitamin E
- Impact of nutrient intake timing on the metabolic response to exercise
- Supplementation with active hexose correlated compound increases survival following infectious challenge in mice
- Resveratrol and novel potent activators of SIRT1:effect on aging and age-related diseases
- Role of fatty acids in the development of insulin resistance and type 2 diabetes mellitus



17-4 No.65 The prospect for developing probiotics

- Possible role for Dietary lutein and zeaxanthin in visual development
- Clinical benefit and preservation of flavonols in dark chocolate manufacturing
- Gene-environment interaction and obesity
- Risk assessment of genetically modified crops for nutrition and health
- Crop conundrum
- Preponderance of the evidence : an example from the issue of calcium intake and body composition
- New insights into thiol-mediated regulation of adiponectin secretion
- Gestational vitamin D deficiency : long-term effects on the brain
- Evidence-based medicine and the role of antioxidants in physically stressed people



18-1 No.66 A scientific approach to exercise and health

- Executive summary of the 2008 Physical Activity Guidelines
- Exercise : It 's the real thing !
- Cross-talk of human gut with bifidobacteria
- Animal experimentation-a personal view
- Major depressive disorder and nutritional medicine:a review of monotherapies and adjunct treatments
- Soy consumption, adhesion molecules, and pro-inflammatory cytokines : a brief review of the literature
- Soy constituents : modes of action in low-density lipoprotein management
- Recent developments in intestinal calcium absorption
- Carbohydrate-restricted versus low-glycemic-index diets for the treatment of insulin resistance and metabolic syndrome
- Nutritional interpretation of folic acid interventions



Japanese Government Information

<Start of Consumer Affairs Agency>

On September 1st 2009, the Consumer Affairs Agency officially came into existence. About 200 staff were reassigned from related government agencies. The Prime Minister and Minister of State for Special Missions have jurisdiction over the consumer civil service organization which are formed from the previous Consumer Affairs Agency and the Consumer Affairs Commission. The Consumer Affairs Agency along with the Ministry of Health, Labour and Welfare and the Ministry of Agriculture, Forestry and Fisheries will consult and advise other ministries on planning affairs. The Agency will refer any matters for discussion to the Consumer Affairs Commission for advice. As necessary, it will act on matters itself. As this agency has jurisdiction over food labeling, it is the government agency with which ILSI Japan will have the closest relationship.

The laws which relate to food labeling are the Food Sanitation Law, the JAS Law and the Health Promotion Act.



Update from the ILSI Japan office:

- The 2010 ILSI Annual Meeting was held January. 22th (Friday) to January.26th (Tuesday) in Puert Rico,USA.
- Change of the board of directors in ILSI Headquarters
Due to the declination of Dr.Shuichi Kimura, following change of board members were approved at the 2010 ILSI Annual Meeting.

	<u>Before</u>	<u>New</u>
Public Trustee	Dr.Shuichi Kimura	Dr.Tamotsu Kuwata (Professor, Graduate Scool of Human Arts)
Industry Trustee	Dr.Tamotsu Kuwata	Dr.Asahi Matuyama (Kikkoman Corporation)
- ILSI Japan General Assembly will be held on February 22th (Monday) at Showa Women's University in the large meeting room. Many attendance is highly appreciated.

Editor's postscript

Along with this Newsletter, ILSI Japan publishes periodic journal titled "ILSI". ILSI Japan is the only branch of ILSI to publish periodic journal and has received many positive comments for such activities.

"ILSI" will soon celebrate its 100th issue. We held two round-table discussions in preparation of this event. One concerned the preparation of an overview of the issues to date, and the other concerned the issuing of a statement on the present state of ILSI Japan along with topics for the future. These will appear in the 100th issue of "ILSI". These are the very profound occasion for me because I have been involved in editing ILSI since the 10th issue. That was at the time when personal computers had just been introduced in the

office and e-mail and homepages were still not commonplace. These days, tools for collection and dissemination of information are advancing very quickly. ILSI Japan is seeking for ways to use those various tools most effectively.

"ILSI" has made an important shift from simply being an ILSI branch bulletin to being a scientific information journal. On the other hand, for dissemination of information on ILSI Japan activities, I believe the Newsletter is a superior tool. At the round-table discussions, the importance of making the activities of ILSI Japan known both within and outside ILSI was pointed out. With the continuing input from all members, we will endeavor to make this Newsletter an effective tool keeping everyone informed of ILSI Japan activities.

ILSI Japan Newsletter

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