

## Search for Anti-obesity and Anti-hyperglycemic Functional Food Factors Using Cultured Cells

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### <Summary>

Bile acids exert anti-obesity and anti-hyperglycemic effects through interaction with their receptor TGR5. Food factors acting as TGR5 agonists are predicted to induce increased secretion of GLP-1 from the small intestine, which increases insulin sensitivity, and block body weight gain by increasing energy expenditure. Aiming at searching for food factors that mimic the TGR5 ligand activity of bile acids, we established an assay system using cultured cells. HEK293 cells overexpressing human TGR5 were cultured with each of food factors to evaluate its agonistic activity by measuring an increase in intracellular cAMP levels. These analyses revealed that nomilin, one of limonoids in citrus fruits, has a potent TGR5 agonistic activity comparable to an endogenous ligand tauroolithocholic acid. A nomilin-containing diet, when consumed by obese mice, was found to block weight gain and enhance blood glucose clearance. Docking simulation analyses together with amino acid substitution analyses of TGR5 showed a possible interaction model between human TGR5 and nomilin.

## Discovering of Anti-Aging Foods by Evaluating Their Ability to Prevent Age-related Hearing Loss in Mices

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### <Summary>

The rate of aging in Japan is the highest in the world, and a further rise is expected over the next several decades. Owing to this rise, there is a high demand for anti-aging foods. However, it is realistically difficult to find and develop evidence-based anti-aging foods because it takes a long time to demonstrate the efficacy of these foods in humans.

We have focused on the aging of the auditory system (age-related hearing loss; AHL) as a model to evaluate the anti-aging properties of foods. AHL is a common phenotype seen in many animals; therefore, animal models can help us to understand the molecular and genetic mechanisms behind this hearing loss. Additionally, hearing ability is easy to measure noninvasively, and we are able to monitor the aging rate throughout the life of the animal. Furthermore, experiments can be designed that use young individuals because hearing loss for the region of higher frequencies begins at a relatively young age. We have searched for foods or food components that delay AHL and found that intake of a lactic acid bacterium, *Lactococcus lactis* strain H61, delays AHL in a mouse model. Intake of strain H61 also prevents the formation of age-related skin ulcers and the decrease of bone density in a senescenceaccelerated mouse, suggesting that this bacterium offers protection against various aging processes.

Recent epidemiological studies have shown that there is a correlation between hearing loss and dementia in humans. AHL is caused by the loss of hair cells and neurons in the inner ear, and the neuronal death process might be similar to that seen during aging of the brain. Additionally, it is hypothesized that dementia may be accelerated by the social isolation caused by hearing loss, decrease of brain stimulation from the auditory system, or a combination of the two. In any case, it is important to prevent AHL, as prevention of AHL may lead to the prevention of dementia. Here, we have shown that the onset of AHL can be delayed through the intake of the antiaging foods in a mouse model, and this noninvasive evaluation method could be applied to human studies.

< Research Institute of ILSI Japan Members >  
Yakult Honsha Co., Ltd. YAKULT CENTRAL INSTITUTE:  
Inheriting and Putting into Practice “Shirota-ism”

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<Summary>

The Yakult Central Institute traces its roots back to a facility established by Dr. Minoru Shirota, the Company’s founder and a medical doctor, at a site in Kyoto in 1955. At that time, the facility each day dynamically carried out and expanded the scope of research designed to realize progress regarding Dr. Shirota’s key objectives: “preventive medicine” and “a healthy intestinal tract leads to a long life“. Dr. Shirota passionately discussed with researchers what should be done to prevent diseases instead of treating them after they occur and what is important for making the intestines healthy and living a long life as he sought to guide Yakult’s research programs along the most potentially productive paths. The ideas actively put forth by Dr. Shirota, known as Shirota-ism, are an invaluable heritage that the Tokyo-based Yakult Central Institute remains committed to building on.

The Yakult Group aims to realize diverse and important objectives in accordance with our corporate philosophy, “We contribute to the health and happiness of people around the world through pursuit of excellence in life science in general and our research and experience in microorganisms in particular.” In doing so, Yakult strives to uncover the essence of preventive medicine from various fields, and based on the foundation of our research regarding intestinal microorganisms, we are working to broaden the scope of our research related to beneficial microorganisms and put into practice Shirota-ism at all times in order to propose specific methods of maintaining health.

The Yakult Central Institute is engaged in a variety of research activities based on Shirota-ism and the results of this research have been applied to foodstuffs, pharmaceuticals and cosmetics for the purposes of preventive medicine and health maintenance. In April 2016, the new Yakult Central Institute was completed with the facilities, organization and environment to drive evolution in and strengthen collaboration between core technologies. Here, we will further develop core technologies for intestinal microbiota and probiotics in a wide range of fields aimed at enhancing the health of people around the world.

Project PAN (Physical Activity and Nutrition)  
The Scientific Evaluation and Activities of TAKE10!® for the Elderly

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*ILSI Japan*

**<Summary>**

To promote healthier aging, Project PAN seeks to prevent lifestyle-diseases among middle-aged people and enhance the QOL of the elderly. Project PAN develops scientific evidence based programs to promote physical activity and to improve the nutritional status of people by their lifestyles. In this report, the scientific evaluation and activities of TAKE10! ® for the elderly that ILSI Japan develops to prevent long term nursing care is reviewed.

## Report of the 49th Session of the Codex Committee on Food Additives

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### <Summary>

The Codex Committee on Food Additives (CCFA) held its Forty-ninth Session in Macao SAR, China, from 20th to 24th March, 2017. 250 more attendees were there from 50 Member countries, European Union and 32 nongovernment international organizations.

The followings were the major agenda in this Session: (1) Codex General Standard for Food Additives, (2) International Numbering System (INS) for Food Additives, (3) Proposal for additions and changes to the priority list of substances proposed for evaluation by JECFA, and (4) Alignment of the food additive provisions of commodity standards and relevant provisions of the GSFA. Discussion paper on the management of CCFA work including “one CCFA approach” would be based on the above 4 main interrelated pillars of the CCFA standing items. The Committee has been unable to reach consensus on the maximum level and technological justification for the use of benzoates and agreed to maintain the current maximum level. Dr. Junshi Chen retired the chair of CCFA.

The next Fiftieth Celebration Session would be held in China from 26th to 30th March 2018.

< Friends in ILSI >  
ILSI Southeast Asia Region  
Annual General Meeting

Keng Ngee Teoh  
*Regulatory Science Group*  
*Quality Assurance Department*  
*Ajinomoto Co. Inc., Japan*

<Summary>

On April 10-11, 2017, ILSI Southeast Asia Region organized its 24th Annual General Meeting (AGM) at the Pullman Jakarta Indonesia Hotel in Jakarta, Indonesia. This was the second time that the ILSI Southeast Asia Region AGM has been organized outside of Singapore, with the first time being in Bangkok, Thailand in 2015. The AGM was attended by about 65 participants from ILSI Southeast Asia Region members, scientific advisors and country committee coordinators.

1. ILSI Southeast Asia Region AGM Business Meeting

The proceeding for the day began with the Assembly of Members Meeting. Mrs. Boon Yee Yeong, Executive Director of ILSI Southeast Asia Region provided the welcome and opening address, which was followed by the President's Address delivered by Mr. Geoffry Smith, President of ILSI Southeast Asia Region. This was followed by other business matters, including the treasurer's report and nomination committee report. As the Guest of Honour, Prof. Peter van Bladeren, who is the current President of ILSI, gave the keynote address providing some updates on the direction of ILSI as a global scientific organization going into the future. He mentioned that there are plans to reform the ILSI Board of Trustees ( BOT ) to facilitate a wider role for the BOT to support ILSI branches in addressing strategic and communication challenges within their respective countries/regions. The last item of the Assembly of Members Meeting was the sharing of a snapshot of ILSI Southeast Asia Region's scientific achievements over the past calendar year, which included among other activities – the 7th Asian Conference on Food and Nutrition Safety in Penang, Malaysia; the ONE ILSI Global Project on Healthy Aging; and support for three fellows from Philippines, Thailand and Vietnam respective to join the ILSI Fellowship Program in Risk Assessment.

The Assembly of Members Meeting was followed by the Board of Directors and Executive Committee Meeting, which discussed many strategic issues and concerns relating to ILSI Southeast Asia Region. This was followed by Program Planning Sessions for the Food and Nutrients in Health and Disease Science Cluster, as well as Food Safety and Risk Assessment Science Cluster.

The second day of the AGM continued with the Country Committee Discussion Meeting, which aimed to discuss ongoing country-specific issues and ways to improve the existing management structure for ILSI Southeast Asia Region Country Committees in Indonesia, Malaysia, Philippines and Thailand. A fifth Country Committee in Vietnam is currently in the process of being established. After the Country Committee Discussion Meeting, the proceedings continued with the Program Planning Sessions for the Nutrition and Food Guidance for

Public Health Science Cluster and Sustainable Food Systems Science Cluster, which concluded before lunchtime.



Picture 1 ILSI SEAR Board, Executive Committee Members and Invited Guests [Prof. Peter van Bladeren, ILSI President (seated, far right) & Dr. Andrew Roberts, Deputy Executive Director, ILSI Research Foundation (standing behind, far left)]

## 2. ILSI Southeast Asia Region Scientific Forum on Nutrition and Food Safety – Perspectives & Challenges for ASEAN

The AGM program was continued in the afternoon with the ‘ILSI Southeast Asia Region Scientific Forum on Nutrition and Food Safety – Perspectives and Challenges for ASEAN’. The Forum was open to the public and over 100 participants joined the meeting. Mr. Geoffrey Smith, President of ILSI Southeast Asia Region provided the opening remarks. The Forum was jointly chaired by Prof. Aman Wirakartakusumah from Bogor Agricultural University, Indonesia, and Prof. Emorn Udomkesmalee from the Institute of Nutrition, Mahidol University, Thailand.

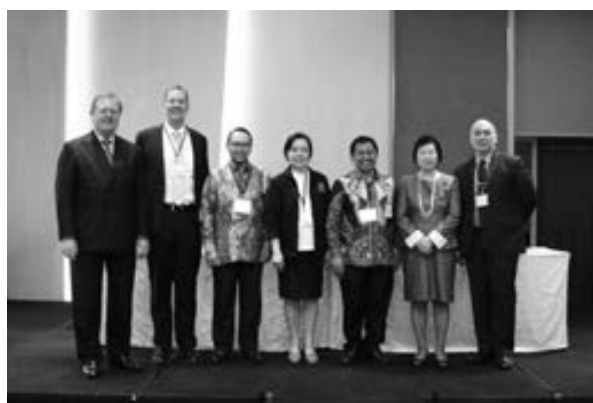
The first speaker of the Forum was Dr. Ferdinal Fernando, Assistant Director and Head of Health Division, ASEAN Socio-Cultural Community Development at the ASEAN Secretariat, who provided an ‘Overview of ASEAN Post-2015 Health Development Agenda’. Dr. Ferdinal shared that ASEAN has now reorganized its health sector development programs into four clusters, including one focusing on Promoting Healthy Lifestyles (Cluster 1) and another on Ensuring Food Safety (Cluster 4). The second speaker of the symposium was Prof. Jeyakumar Henry, Director at the Clinical Nutrition Research Centre, Singapore. Prof. Henry talked on the ‘Importance of Nutrient Density and Its Impact on Health’ and explained about the concepts relating to nutrient profiling. This was followed by a presentation by Dr. Siswanto, Head of the National Institute of Health Research and Development, Ministry of Health, Indonesia about the ‘Indonesia Total Diet Study: Risk Assessment on Chemical Exposure’. Dr. Siswanto explained that the Indonesia Total Diet Study reviewed exposures to chemicals in food including pesticide residues, heavy metals and food additives, as well as intake of

nutrients among the Indonesian population.

Following a short tea break, Dr. Daniel Hammer, Head of the Nestle Quality Assurance Center, Singapore, continued the program and gave a talk on ‘Analytical Methods – Recent Advances in Detection of Contaminants in Food’ and shared some of the new technologies currently being used to analyze contaminants in food, such as ICP-MS to detect heavy metals. The next paper was shared by Prof. Shirley Ho, Wee Kim Wee School of Communication and Information, Nanyang Technological University, Singapore, about ‘Public Perception and Communication Strategies on New Food Technologies’. Prof. Ho shared her research on public perception of the use of nanotechnology in food among Singaporeans. Finally, Dr. Andrew Roberts, Deputy Executive Director of the ILSI Research Foundation, USA, gave a talk about ‘Risk, Reward and Regulation: Understanding the Future of Agricultural Innovation through the Lens of the Past’. Dr. Roberts provided some perspectives on the history and development of plant breeding technologies and its regulation, such as genetic engineering (GE), and how these preceding approaches to regulating GE crops could have an impact on newer technologies, such as gene editing.



Picture 2 Ms. Pauline Chan presenting about ILSI SEAR scientific accomplishments for 2016-2017.



Picture 3 Speakers and Chairpersons for the ILSI SEAR ‘Scientific Forum on Nutrition and Food Safety – Perspectives & Challenges for ASEAN’.

### 3. Conclusion

Once again, the ILSI Southeast Asia Region AGM was successfully organized with an interesting Scientific Forum discussing many relevant scientific topics of interest in the area of food safety and nutrition.