Symposia | シンポジウムB

Thu. Aug 28, 2025 9:00 AM - 11:40 AM JST | Thu. Aug 28, 2025 12:00 AM - 2:40 AM UTC Room E(3F 131)

[SYB5] [B5] International Cooperation with Asian Academic Societies Towards Sustainable Future

世話人：松村　康生（委員長・京都大学），本城　賢一（副委員長・九州大学大学院）

9:00 AM - 9:05 AM JST | 12:00 AM - 12:05 AM UTC

Opening Remarks

9:05 AM - 9:25 AM JST | 12:05 AM - 12:25 AM UTC

[SYB5-01]

Retrospective history and prospective visions: from the Nutrition Society of Taiwan to global collaborations

* Jane C.-J Chao[1] (1. Nutrition Society of Taiwan)

9:25 AM - 10:05 AM JST | 12:25 AM - 1:05 AM UTC

[SYB5-02]

Innovative Production of Foaming Bacterial Cellulose and Its Potential Applications

*Shin-Ping Lin[1] (1. School of Food Safety, College of Nutrition, Taipei Medical University, Taiwan)

10:05 AM - 10:35 AM JST | 1:05 AM - 1:35 AM UTC

[SYB5-03]

Introduction to KoSFoST and International Cooperation in Food Science between Japan and Korea

*Young-Suk Kim[1] (1. Ewha Womans University)

10:35 AM - 11:05 AM JST | 1:35 AM - 2:05 AM UTC

[SYB5-04]

Towards a Blue Revolution: Collaborative Innovation in Sustainable Aquatic Cultured Meat – Introducing the Ministry of Oceans and Fisheries Consortium in Korea

*Jin-Kyu Rhee[1] (1. Department of Food Science and Biotechnology, Ewha Womans University)

11:05 AM - 11:35 AM JST | 2:05 AM - 2:35 AM UTC

[SYB5-05]

Health Function of Phytochemicals

*Momoko Ishida[1] (1. Graduate School of Agriculture, Ehime University)

11:35 AM - 11:40 AM JST | 2:35 AM - 2:40 AM UTC

Closing Remarks

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[SYB5-01] Retrospective history and prospective visions: from the Nutrition Society of Taiwan to global collaborations

* Jane C.-J Chao[1] (1. Nutrition Society of Taiwan)

Keywords：Nutrition Society of Taiwan、Global visions、International collaboration、International conference、International exchange

【Introduction of speakers】

Dr. Jane C.-J. Chao obtained her Ph.D. degree from the Department of Human Nutrition and Food Management at the Ohio State University in 1993. Subsequently, she had the post-doctoral training in the Division of Foods and Nutrition at the University of Illinois at Urbana-Champaign from 1993 to 1994, and returned to her alma mater Taipei Medical University (TMU) since 1995. She is currently in the position of Dean in the Office of Global Engagement, Professor in the School of Nutrition and Health Sciences at TMU, and in the position of President in the Nutrition Society of Taiwan since 2021.

The Nutrition Society of Taiwan was established in 1974 (the 63rd year of the Republic of China), and is now for 51 years. The Society was founded by a group of professionals from various fields including nutrition, food science, agriculture, public health, and medicine, and all founders shared a noble vision. The passion and dedication of our pioneers focus on promoting public nutrition and health not only for establishing the foundation of the society but also for inspiring younger generations to carry on their missions. Over the past five decades, the society has grown steadily, and experienced twelve presidents. Membership continues to increase each year with a current total of 6,662 members including 1,580 lifetime members, 3,978 professional members, 1,080 student members, and 24 corporate group members. With the belief that “the nutritional health of the national people is an indicator of national strength, and a reflection of cultural standards”, the society is committed to cultivating the professionals in preventive healthcare and nutritional care with humanistic concern as well as global and interdisciplinary visions via the work tasks of 9 committees. Additionally, the important mission of the society is to strengthen international academic collaborations in the fields of nutrition and food science. In this spirit, we propose to enhance our engagement with the Japanese Society for Food Science and Technology through a range of academic exchange activities which include co-hosted symposium/conference on emerging topics in food science and nutrition, scholar exchanges between both societies, and joint student exchange programs to foster mutual learning and development.
By promoting such interactions, we aim to create an environment that supports the exchange of knowledge, research innovation, and educational opportunities between

Japan and Taiwan. Furthermore, we believe that the initiation through these collaborations can further contribute to the development and promotion of public health nutrition policies in both countries. We are looking forward to future opportunities for the partnership that will benefit academic communities and promote better health outcomes across borders.

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9:25 AM - 10:05 AM JST | 12:25 AM - 1:05 AM UTC

[SYB5-02] Innovative Production of Foaming Bacterial Cellulose and Its Potential Applications

*Shin-Ping Lin[1] (1. School of Food Safety, College of Nutrition, Taipei Medical University, Taiwan)

Keywords：bacterial cellulose、foaming bacterial cellulose、in situ modification、food packaging

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Education:
PhD. Institute of Biotechnology, National Taiwan University, Taiwan, May 2017
Professional Experience:
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Senior researcher fellow, Research and Development, Phalanx Biotech Group, Taiwan.

Bacterial cellulose (BC) is a nano-scale biomaterial produced from microorganism. Among of BC producing microorganisms, *Komagataeibacter xylinus* is the most commonly used microorganism due to its high BC production. Compared to plant cellulose, BC presents higher purity without lignin, pectin, or hemicellulose. Owing to its excellent mechanical property, high water content, and biocompatibility, BC has been applied to biomedical dressing, food packaging and cosmetic mask applications. However, its lack of specific biological activities, including antimicrobial and antioxidant properties, limits its broader utility. To address this challenge, we developed an *in situ* modification strategy using a foaming culture system to produce foaming BC (FBC). Various additives were incorporated into FBC during cultivation to obtain the specific functional FBC. First, chitosan was added to produce chitosan/FBC composites with antimicrobial ability. The chitosan/FBC was found that can significantly inhibit *Staphylococcus aureus* and *Escherichia coli* growth by approximately 2 log CFU/mL. Second, agar was used to regulate pore size of FBC, and facilitate the adsorption and controlled release of carvacrol, a bioactive compound with known antimicrobial activity. The release rate of carvacrol was positively correlated with pore size of agar/FBC, enabling sustained microbial inhibition. In food packaging applications, the carvacrol-loaded agar/FBC effectively suppressed the growth of *Shewanella putrefaciens* and reduced lipid oxidation in fish during storage, demonstrating strong potential as an active packaging material. Last but not least, FBC also served as a superior scaffold for microbial co-culture. Co-cultivation with recombinant E. coli enabled the *in situ* biosynthesis of violacein-loaded FBC. The violacein/FBC composite exhibited strong metal ion adsorption capacity, particularly for

Cu(II), highlighting its potential for use in functional packaging and wastewater treatment. Overall, the FBC production system serves as a modification strategy that enables the *in situ* incorporation of additives or microorganisms into the cellulose fiber during cultivation. The approach allows for the fabrication of BC materials with specific functionalities. Future work will focus on incorporating a broader range of modifiers to explore the applicability of FBC across different fields.

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[SYB5-03] Introduction to KoSFoST and International Cooperation in Food Science between Japan and Korea

*Young-Suk Kim[1] (1. Ewha Womans University)
Keywords：KoSFoST、JSFST、international cooperation

Education
Ph. D. Rutgers University, 1997
MS. & BS. Seoul National University, 1992, 1990
Professional Experience
Professor, Ewha Womans University, 2000-present
Principal Scientist, Griffith Laboratories Company, 1999-2000,

The Korean Society of Food Science and Technology (KoSFoST), founded in 1968, is a leading academic society dedicated to advancing food science and technology in Korea. Through its academic conferences, peer-reviewed journals, industry collaborations, and educational initiatives, KoSFoST plays a central role in bridging academia, government, and industry in the field of food science and technology. As global food systems face increasing challenges - from sustainability and functional foods to novel processing technologies - the importance of international collaboration continues to grow. In particular, since Japan and Korea share similar food cultures, scientific interests, and regional challenges, bilateral collaboration between JSFST and KoSFoST can be highly synergistic. The cooperation can be further strengthened through joint research initiatives, collaborative workshops, and student/researcher exchange programs. KoSFoST aims to strengthen bilateral cooperation by fostering deeper academic ties and innovation-driven partnerships.

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10:35 AM - 11:05 AM JST | 1:35 AM - 2:05 AM UTC

[SYB5-04] Towards a Blue Revolution: Collaborative Innovation in Sustainable Aquatic Cultured Meat – Introducing the Ministry of Oceans and Fisheries Consortium in Korea

*Jin-Kyu Rhee[1] (1. Department of Food Science and Biotechnology, Ewha Womans University)

Keywords：Aquatic Cultured Meat、Blue Bioeconomy、Marine Cell Culture、Biomimetic Scaffolds、Digital Food Modeling

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Education:
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M.Sc. Food and Biotechnology, Yonsei University, Seoul, Korea December 2000
Professional Experience:
CEO and Founder, 2019-Present, SuFAB Inc., Seoul, Korea
Professor in Department of Food Science and Biotechnology, 2015-Present

Amidst escalating concerns over marine ecosystem degradation, climate change, and the unsustainable exploitation of wild fisheries, the global food sector is urgently seeking alternative protein sources that can ensure both nutritional security and environmental resilience. In response, the Republic of Korea has launched a large-scale national R&D initiative under the auspices of the Ministry of Oceans and Fisheries (MOF), aimed at pioneering the development of aquatic cultured meat. This effort forms a critical pillar of Korea's emerging blue bioeconomy strategy and is designed to future-proof the seafood supply chain.

This presentation introduces the MOF's flagship research consortium for aquatic cultured meat, which brings together a multidisciplinary team of leading academic institutions, biotechnology firms, and marine science experts. The consortium's mission is to establish a next-generation platform for the production of high-quality, sustainable fish- and shellfish-based cultivated foods. The initial target species include yellow grouper (*Epinephelus awoara*), oyster (*Crassostrea gigas*), scallop (*Patinopecten yessoensis*), and kuruma prawn (*Marsupenaeus japonicus*)—all of which are economically and culturally significant in the seafood market.

The consortium integrates advances in marine cell culture, biomimetic scaffold engineering, and AI-assisted food design to recreate the complex structure and sensory properties of real seafood. The following major technical achievements are expected: (1) successful immortalization of muscle and fat cell lines from the selected species; (2)

development of serum-free, marine-derived culture media that reduce both cost and environmental burden; (3) fabrication of edible scaffolds from marine collagen and seaweed hydrogels that mimic native extracellular matrices; and (4) development of a digital modeling platform to simulate the structural and textural transitions of cultivated seafood during processing and consumption.

This approach supports the creation of high-fidelity cultivated seafood products that closely resemble the texture and eating experience of conventional seafood, thereby improving consumer acceptance. The presentation will outline Korea's strategic vision and technical roadmap for scaling aquatic cultured meat technologies and emphasize the growing importance of international collaboration to drive a sustainable "blue revolution" in future food systems.

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[SYB5-05] Health Function of Phytochemicals

*Momoko Ishida[1] (1. Graduate School of Agriculture, Ehime University)
Keywords：phytochemicals、functional foods、anti-inflammatory effect、anti-allergic effect

【Introduction of speakers】
Education:
Ph.D. in Agriculture, Ehime University, Japan, Mar 2017
Professional experience:
Assistant Professor, Graduate School of Agriculture, Ehime University, Apr 2020–Present
Researcher, Graduate School of Agriculture, Ehime University, Mar 2017–Mar 2020

Phytochemicals such as polyphenols, carotenoids, glucosinolates, and alkaloids are bioactive compounds found in fruits, vegetables, grains, and other plant-based foods. In plants, these compounds are primarily produced as part of defense mechanisms against pests, pathogens, and environmental stress. Although phytochemicals are not classified as essential nutrients like vitamins and minerals, they contribute to human health and may help to prevent various diseases. They exhibit a wide range of beneficial health functions, including antioxidant, anti-inflammatory, and anti-allergic effects. This presentation will introduce research on the functional properties of phytochemicals in citrus fruits and spices.
p-Synephrine is an alkaloid found in *Citrus* species and is widely used as a dietary supplement for weight loss, weight management, and enhancement of athletic performance. Several studies have demonstrated its anti-inflammatory effects. However, the specific cellular targets and detailed mechanisms underlying its anti-inflammatory effects remain unclear. This study aimed to investigate the anti-inflammatory effect of *p*-synephrine on macrophages, which play a key role in the innate immune response, and to elucidate the underlying mechanisms *in vitro* using mouse macrophage cell line, RAW264.7 cells. *p*-Synephrine significantly inhibited the production of proinflammatory cytokines in lipopolysaccharide-stimulated RAW264.7 cells. It is supposed that this anti-inflammatory effect is mediated by β-adrenergic receptors and attributed to the downregulation of the p38 MAPK and NF-κB signaling pathways.
The anti-allergic effects of the compounds from spices such as coriander and cumin have been demonstrated in several studies. While many studies have focused on the lipid-soluble components in spices, our research has been directed toward the water-soluble components. For example, a hot water extract from the aerial parts of coriander was found to inhibit the degranulation of rat basophilic leukemia cell line, RBL-2H3 cells, and

the active compound in the extract was identified. This compound is considered to be the primary contributor to the anti-allergic effect of the hot water extract.
The development of functional foods based on phytochemicals holds significant promise for improving health conditions. However, several challenges must be overcome to fully realize their potential. These include demonstrating scientific efficacy through human trials, enhancing bioavailability, ensuring stability and safety, and addressing economic and consumer-related concerns. Collaborative efforts among researchers, food technologists, regulatory agencies, and industry stakeholders are essential to promote the development of functional foods that are safe, effective, and widely accessible. Accordingly, this presentation will introduce the industry-academia collaboration based on research into food functionality conducted at the Food and Health Function Research Center, Ehime University.