

Rare Sugar Congress 2025

– Program –

Update: 2025.11.20

November 16 (Sunday) Kagawa International Conference Hall & Exhibition Hall

Registration (Conference Hall)

Poster Presentation (Exhibition Hall)

November 17 (Monday) Kagawa International Conference Hall

Registration (Conference Hall)

Opening Ceremony

Special Keynote Session

Special Program

Session 1 Food-related Properties of Rare Sugars

Reception Banquet (The JR Hotel Clement Takamatsu)

November 18 (Tuesday) Kagawa International Conference Hall

Session 2 Rare Sugar Production

Session 3 Rare Sugars for Medical Field

November 19 (Wednesday) Kagawa International Conference Hall & Exhibition Hall

Session 3 Rare Sugars for Medical Field (continued)

Session 4 Physicochemical Properties of Rare Sugars

Session 5 Various Usages of Rare Sugars

Poster Discussion (Exhibition Hall)

Award & Closing Ceremony

Monday, November 17, 2025

09:00～ Registration (Kagawa International Conference Hall)

Opening Ceremony

10:30～10:45

Overall facilitator: Kazuya Akimitsu, Kagawa University (Japan)

Congratulatory Remarks

Natsuo Ueda, President of Kagawa University (Japan)

Congratulatory Remarks

Toyohito Ikeda, Governor of Kagawa Prefecture (Japan)

Welcome Address

Ken Izumori, President of the International Society of Rare Sugars

Special Keynote Session

10:45～12:20

Chair: Yuma Tani, Matsutani Chemical Industry Co., Ltd., Japan

10:45～ **Keynote Lecture:**

MAHA: Unprecedented Changes to the U.S. FDA – Update and What the Future Holds

Anthony Pavel (Keller and Heckman LLP, USA)

11:20～ **Special Lecture:**

The Evolving Sweetener Landscape: Global Trends, Scientific Insights, and Regulatory Perspectives on High-Intensity Sweeteners, Polyols, and Rare Sugars

Carla Saunders (Calorie Control Council, USA)

11:50～

Lecture:

Evolving global environment for sweeteners and opportunities for rare sugars

Kevin Miller (Mars, Inc., USA)

Enabling the growth of Rare Sugars: Korea's Allulose market experience

Jungsook Han (Samyang Corporation, Republic of Korea)

Updates of Markets, Regulations and Studies of Tagatose

Ed Rogers (Bonumose, Inc., USA)

Lunch

Sponsored by Matsutani Chemical Industry Co., Ltd.

13:00～14:00

Special Program

14:00～15:00

Chair & Modulator: Yuma Tani (Matsutani Chemical Industry Co., Ltd., Japan)

14:00～

Panel Discussion:

Consumer Attitudes and Preferences Toward Sugars and Sweeteners: What It Means for Food Industries

Panelists:

Anthony Pavel (Keller and Heckman LLP, USA)

Carla Saunders (Calorie Control Council, USA)

Kevin Miller (Mars, Inc., USA)

Jihye Shin (Samyang Corporation, Republic of Korea)

Ed Rogers (Bonumose, Inc., USA)

and more panelists

Coffee Break

Sponsored by Suntory Holdings Ltd.

15:00~15:30

Oral Presentation

Session 1

Food-related Properties of Rare Sugars

15:30~17:00

Chair: Masahiro Ogawa, Kagawa University, Japan

S01

15:30~ Combined effects of exercise training and D-allulose intake on endurance capacity in mice

Takamasa Tsuzuki (Meijo University, Japan)

S02

15:45~ Comparison of an allulose preload and non-nutritive sweeteners on diet-induced thermogenesis, substrate oxidation, glycemic response, and satiety over 5 hours in normal-weight adults

Nick Bellissimo (Toronto Metropolitan University, Canada)

S03

16:00~ Analysis of aroma compounds derived from heated *tsukudani* seasoning liquid models containing rare sugars

Miku Miyoshi (Kagawa Prefectural Industrial Technology Center, Japan)

S04

16:15~ Enhancing antioxidant and physicochemical properties of cassava through monosaccharide coating and controlled thermal processing: Application to a manggleng-like product

Ahmad Ni'matullah Al-Baarri (Diponegoro University, Indonesia)

S05

16:30～ Cryoprotective effect of D-allulose on the physical properties of soy protein-kappa carrageenan gel

Lillah Zuhrotul Ukhro (Kagawa University, Japan)

S06

16:45～ The effect of rare sugars allulose and isomaltulose on the physical properties of marshmallows, gummies and hard candies as compared to candies made with sucrose

Josie Sorensen (Utah State University, USA)

Reception Banquet

17:30～20:00

Venue: The JR Hotel Clement Takamatsu

17:30～18:00 Welcome Drink

18:00～20:00 Reception Banquet

Tuesday, November 18, 2025

Oral Presentation

Session 2

Rare Sugar Production

9:00~10:30

Chair: Akihide Yoshihara, Kagawa University, Japan

S07

09:00~ Construction of hyperthermostable D-allulose 3-epimerase from *Arthrobacter globiformis* M30 by protein engineering
Kouhei Ohtani (Matsutani Chemical Industry Co., Ltd., Japan)

S08

09:15~ Ancestral reconstruction and characterization of ketose-3-epimerase
Takuma Suzuki (The University of Osaka, Japan)

S09

09:30~ Hyper stable allulose epimerase for affordable production of allulose at an industrial scale
Ziv Zwighaft (Ambrosia Bio Ltd., Israel)

S10

09:45~ Preparation of immobilized enzyme and its characterization on bio-conversion of D-allose from D-allulose
Chang-Su Park (Daegu Catholic University, Republic of Korea)

S11

10:00~ Crystal structure analysis of recombinant ribitol dehydrogenase from *Klebsiella oxytoca* in complex with D-allose
Hiromi Yoshida (Kagawa University, Japan)

Coffee Break

Sponsored by Anderson Advanced Ingredients

10:15~10:45

Session 2 (continued)

Rare Sugar Production

10:45~11:45

Chair: Chang-Su Park, Daegu Catholic University, Republic of Korea

S12

10:45~ Characterization of L-arabinose isomerase from *Lactiplantibacillus plantarum* LC82 and D-tagatose production
Kenji Morimoto (Kagawa University, Japan)

S13

11:00~ Three biological approaches to D-tagatose production
Wanmeng Mu (Jiangnan University, China)

S14

11:15~ Production of ketoheptoses by transketolase from *Thermus thermophilus* HB8 in combination with D-tagatose 3-epimerase from *Pseudomonas cichorii* ST-24
Akihide Yoshihara (Kagawa University, Japan)

S15

11:30~ Synthetic study of 8- and 9-carbon sugars by *Thermus thermophilus* HB8 transaldolase
Shigehiro Kamitori (Kagawa University, Japan)

Lunch

Sponsored by Ingredion Incorporated

11:45~13:00

Session 2 (continued)

Rare Sugar Production

13:00~14:30

Chair: Masashi Sato, Kagawa University, Japan

S16

13:00~ Regioselective pivaloylation of D-allulose and D-fructose and its application to the stereoselective synthesis of α -D-allulofuranosides
Akihiro Iyoshi (Nagasaki University, Japan)

S17

13:15~ Development of α - and β -stereoselective allulopyranosylation reactions
Kenji Arimitsu (Osaka Ohtani University, Japan)

S18

Cancelled

S19

13:30~ Ru-catalyzed one-pot epimerization of 1-*O*-methyl- β -D-glucopyranoside into 1-*O*-methyl- β -D-allopyranoside via dehydrogenation–hydrogenation mechanism
Mizuho Yabushita (Tohoku University, Japan)

S20

13:45~ Phosphorylation–dephosphorylation as a versatile platform for rare sugar production
Shota Atsumi (University of California, Davis, USA)

S21

14:00~ Enzymes and methods for allulose production from starch
Erva Parıldı (Adana Alparslan Türkeş Science and Technology University, Turkey)

Coffee Break

Sponsored by Magmitt Pharmaceutical Co., Ltd.

14:15~15:00

Session 3

Rare Sugars for Medical Field

15:00~16:45

Chair: Koji Murao, Kagawa University, Japan

S22

15:00~ Weight and glycemic control by allulose vs oral GLP-1 receptor agonist in obese mice: common and distinct properties

Toshihiko Yada (Kansai Electric Power Medical Research Institute / Gifu University, Japan)

S23

15:15~ ¹⁸F-FDG-PET evaluation of D-allulose-related changes in human brown adipose tissue: An exploratory study

Kensaku Fukunaga (Kagawa University, Japan)

S24

15:30~ Safety and efficacy of D-allulose on Autism spectrum disorder patients: a randomized, double-blind, placebo-controlled, crossover study followed by an open-label long-term study

Koyuru Kurane (Jichi Medical University, Japan)

S25

15:45~ Characterizing GLP-1R-positive vagal neurons in the nodose ganglion via fine-tuned scGPT

Sirawit Sriwichaiin (Tohoku University School of Medicine, Japan)

S26

16:00~ Rare sugar D-allulose improves anxiety and social behavior via gut GLP-1–vagal afferent nerves–brain axis

Kengo Iba (Kyoto Prefectural University, Japan)

S27

16:15～ D-Allulose acts as a potential intervention for D-galactose-induced skeletal muscle aging in rats via attenuation of oxidative stress, inflammation, mitochondrial dysfunction, and dysregulated mitochondrial dynamics

Chayodom Maneechote (Chiang Mai University, Thailand)

Academic Street Session -Machinaka Session

16:30～16:50 Instruction break for the explanation of "Exploring the City Night"

17:30～19:00 Outdoor party under the dome at “Marugame-machi Ichibangai”

Wednesday, November 19, 2025

Oral Presentation

Session 3 (continued)

Rare Sugars for Medical Field

9:15~10:30

Chair: Katsuya Hirano, Kagawa University, Japan

S28

09:15~ Ameliorative effect of allulose on high-sucrose-induced impulsivity in mice
Takayoshi Mamiya (Meijo University, Japan)

S29

09:30~ Molecular transport analysis of D-allulose and D-allose: basis for physiological function
Kazuyo Kamitori (Kagawa University, Japan)

S30

09:45~ D-Allose-induced delayed cell cycle transition associates with altered phosphoglucose isomerase activity in pancreatic cancer
Asadur Rahman (Kagawa University, Japan)

S31

10:00~ Antitumor effects of rare sugar D-allose in prostate cancer cells via TXNIP-mediated ROS induction and apoptosis
Rikiya Taoka (Kagawa University, Japan)

S32

10:15~ The rare sugar D-allose improves gut microbiota diversity and macrophage function, and suppresses inflammatory carcinogenesis in mice
Lin Hai Kurahara (Kagawa University, Japan)

Coffee Break

Sponsored by Mitsui Chemical Crop & Life Solutions Inc.

10:30~11:00

Session 4

Physicochemical Properties of Rare Sugars

11:00~11:30

Chair: Kazuhiro Fukada, Kagawa University, Japan

S33

11:00~

Thermal properties and phase diagrams of rare sugars

Luis J. Bastarrachea (Utah State University, USA)

S34

11:15~

Do rare sugars exhibit polymorphic crystals?

Tomohiko Ishii (Kagawa University, Japan)

Session 5

Various Usages of Rare Sugars

11:30~12:00

Chair: Kazuya Akimitsu, Kagawa University, Japan

S35

11:30~

A multidisciplinary approach for novel antibacterial discovery

Lingbing Kong (Kagawa University, Japan)

S36

11:45~

Functional analysis of rice phosphoglucomutase in relation to the rare sugar effect in sucrose and starch pathways

Kazuya Akimitsu (Kagawa University, Japan)

Lunch

12:00~13:00

Poster Discussion

(Exhibition Hall on the ground floor of Hall Building)

13:00~15:00

Odd: 13:00~13:45

Even: 13:45~14:30

Free discussion: 14:30~15:00

Award & Closing Ceremony

15:00~16:00

Chair: Masaaki Tokuda, Kagawa University, Japan

(International Committee of ISRS)

15:00~15:20 Award Ceremony

Poster Award (Best Poster Award & Poster Awards)

Presenter: Saisamorn Lumyong, Chiang Mai University, Thailand

(International Committee of ISRS)

15:20~16:00 Closing Ceremony

Closing Remarks

Ken Izumori, President of the International Society of Rare Sugars