

## **Final Schedule (Updated on March 16, 2023)**

### **March 31 (Friday) Kagawa International Conference Hall:**

09:30~10:30 Registration

10:30~10:45 Overall facilitator: Kazuya Akimitsu (Kagawa University)

Opening ceremony:

Congratulation Remarks by Yoshiyuki Kakehi

President of Kagawa University (Japan)

Welcome & Keynote Address by Ken Izumori

President of International Society of Rare Sugars

10:45~11:20 Special Keynote lecture: “Health & Carbohydrates”

Chair: Yuma Tani (Rare Sugar International Corporation, Japan)

Presenter: Satoru Yamada

Vice President, Director of Endocrinology and Metabolism Department, and  
Chief of Diabetes Center of Kitasato University Kitasato Institute Hospital  
(Japan)

11:20~12:20 Special lecture: “Nutrition & Health”

Chair: Yuma Tani (Rare Sugar International Corporation, Japan)

Presenter I: Kevin Miller “Processed foods, ingredients, and strategies to promote”

President of Whole Grain Initiative (USA)

Presenter II: Sebastian Smith “Sugar Reduction Solutions & Market Trends”

Ingredion Incorporated (USA)

12:20~12:30 Group photo session

12:30~13:30 Lunch (sponsored by Matsutani Chemical Industry Co., Ltd.)

13:30~13:40 Congratulation Remarks by Toyohito Ikeda

Governor of Kagawa Prefecture (Japan)

13:40~15:00 Special Program: “Labeling of Rare Sugars”

Chair: Yuma Tani (Rare Sugar International Corporation, Japan)

Panel discussion I “Rare sugar labeling in Markets”

Panel discussion II “A proposal for functional sugars in future”

Modulator: Yuma Tani (Rare Sugar International Corporation, Japan)

Panelists: Food industries’ representatives

Kevin Miller (Whole Grain Initiative, USA)

Chiya Kuraishi (Coca-Cola Tokyo Research & Development Co. Ltd., Japan)

Takanobu Higashiyama (HAYASHIBARA CO., LTD., Japan)

Ed Rogers (Bonumose, Inc., USA)

Sebastian Smith (Ingredion Incorporated, USA)

15:00~15:30 Coffee break (sponsored by Ingredion Incorporated)

15:30~16:30 Oral presentations:

Session 1 Food-related properties of rare sugars

Food-related properties 4 speakers

Chair: Masahiro Ogawa /14 min each (including presentation and discussion)

Masaru Ochiai: The influence of fat-carbohydrate content in diet on anti-obesity effects of D-allulose in rats **S01**

Saranta Sawettanun: Physicochemical parameters, volatile compounds and organoleptic properties of bread prepared with substituted sucrose with rare sugar D-allulose **S02**

Miku Miyoshi: Effect of rare sugars on soy sauce brewing and related microorganisms **S03**

Takako Yamada: Dietary D-allulose reduces body fat accumulation in rats fed medium-chain triglyceride diets **S04**

17:30~18:00 Welcome drink (Rhiga Hotel Zest Takamatsu)

18:00~20:00 Reception banquet (Rhiga Hotel Zest Takamatsu)

Congratulation Remarks by Toyohito Ikeda Governor of Kagawa Prefecture (Japan)

Congratulation Remarks by Yoshiyuki Kakehi President of Kagawa Univ. (Japan)

Welcome Address by Ken Izumori President of ISRS

### **April 1 (Saturday) Kagawa International Conference Hall:**

09:00~10:30 Oral presentations:

Session 2-1 Rare sugar production (1)

Chair: Ken Izumori /14 min each (including presentation and discussion)

Enzymology & Enzymatical production 6 speakers

Wanmeng Mu: Engineering D-allulose 3-epimerase from *Clostridium cellulolyticum* for improved thermostability using directed evolution facilitated by a nonenzymatic colorimetric screening assay **S05**

Chang-Su Park: Enzymatic characterization to produce D-allose from D-allulose by a recombinant L-rhamnose isomerase from *Paenibacillus baekrokdamisoli* **S06**

Akihide Yoshihara: Production of eight ketoheptoses using transketolase from *Thermus thermophilus* HB8 and D-tagatose 3-epimerase from *Pseudomonas cichorii* ST-24 **S07**

Kenji Morimoto: Effect of organic germanium on isomerization for monosaccharide **S08**

Garry A. Diopol: Process for producing a high-maltose syrup from rice (*Oryza sativa* L.) bran [S09](#)

Kamaljit Sood: Improved production process for the low-calorie sugar isomaltulose [S10](#)

10:30~10:50 Coffee break (sponsored by Mitsui Chemicals Crop & Life Solutions, Inc.)

10:50~12:05 Session 2-2 Rare sugar production (2)

Chair: George Fleet/14 min each (including presentation and discussion)

Enzymology & Chemical production 5 speakers

Qianzhen Dong: Development of food-grade expression system for preparing D-allulose-3-epimerase [S11](#)

Hiromi Yoshida: X-ray structure of recombinant ribitol dehydrogenase from *Klebsiella oxytoca* [S12](#)

Shigehiro Kamitori: X-ray structure of allose-binding protein coded in allose operon [S13](#)

Atsushi Ueda: Synthesis of 5-thiosucrose from D-allulose and investigation of protecting groups [S14](#)

Toda Stankovic: Synthesis of 3-deoxy-3-fluoro-D-xylulose [S15](#)

12:05~13:00 Lunch

13:00~14:30 Session 3-1 Rare sugars for medical field (1)

Chair: Katsuya Yamada /14 min each (including presentation and discussion)

Rare sugars for medical field 6 speakers

Rikiya Taoka: Growth Inhibitory Effects of Rare Sugar D-Allose on Renal Cell Carcinoma [S16](#)

Xiaodong Li: The therapeutic effect of D-allose on colitis-associated carcinogenesis [S17](#)

Takahiro Kanda: Antitumor effect of D-allose on glioblastoma cell lines [S18](#)

Asadur Rahman: Antiproliferative effects of D-allose associates with the delayed cell cycle transition in pancreatic ductal adenocarcinoma [S19](#)

Kazuyo Kamitori: Molecular analysis and physiological significance of D-allulose and D-tagatose transport by glucose transporters [S20](#)

Katsuya Yamada: L-Glucose: another path for cancer cells [S21](#)

14:30~15:00 Coffee break (sponsored by Magmitt Pharmaceutical Co., Ltd.)

15:00~16:30 Session 3-2 Rare sugars for medical field (2)

Chair: Koji Murao /14 min each (including presentation and discussion)

Rare sugars for medical field 6 speakers

Toshihiko Yada: D-Allulose activates satiety neurons and inhibits appetite neurons: an outstanding ability to regulate feeding and metabolism [S22](#)

Yermek Rakhat: D-Allulose activates pro-opiomelanocortin neurons in the hypothalamus and cooperates with glucagon-like peptide-1 [S23](#)

Yuka Yamashita: D-Allose attenuated RPMCs death induced by high dose of D-glucose via suppressing ER stress-initiated apoptotic signal pathway [S24](#)

Katsuaki Hoshino: Immunomodulatory effects of D-allose on the function of plasmacytoid dendritic cells [S25](#)

Toshihiro Kobayashi: A study on the effect of D-allulose on suppressing postprandial hyperglycemia in patients with type 2 diabetes [S26](#)

Yusaku Iwasaki: Release of intestinal hormone GLP-1 by D-allulose ameliorates hyperglycemia through gut - vagal afferent nerves - brain axis [S27](#)

16:30~16:45 Coffee break

16:45~17:30 Session 4 Physicochemical properties of rare sugars

Chair: Tomohiko Ishii/14 min each (including presentation and discussion)

Physicochemical properties 3 speakers

Kazuhiro Fukada: Hydration behavior of hexoses revisited [S28](#)

Nobutake Tamai: Thermodynamic study on the effect of monosaccharides on phase transitions of phospholipid bilayer membrane [S29](#)

Tomohiko Ishii: Fingerprint of Hydrogen Bonding Network in Rare Sugar Single Crystal [S30](#)

17:30~18:45 Session 5 Various usages of rare sugars

Chair: Kazuya Akimitsu/14 min each (including presentation and discussion)

Agrochemical properties 5 speakers

Syed Muniruzzaman: Evaluation of rare ketohexoses as antiviral compound [S31](#)

Roger A Laine: Rare Sugars as Insect Control Compounds [S32](#)

Verasak Sahachaisaree: Allitol and D-allulose in native *Itea* plant of Thailand, the *Itea riparia* [S33](#)

Susumu Mochizuki: Characteristic analysis of *Itea virginica* transketolase 1 (IvTK1) [S34](#)

Kazuya Akimitsu: Functional analysis of rice phosphoglucose isomerase [S35](#)

## **April 2 (Sunday) Exhibition Hall & Kagawa International Conference Hall:**

09:00~12:00 Poster presentation (Poster presenters must stay and give a chance of discussion with audience in the front of each poster from 9:30 to 10:30 for odd-numbered posters and 10:30 to 11:30 for even-numbered posters) in Exhibition Hall

Coffee break (sponsored by Morinaga Milk Industry Co., Ltd.)

12:00~13:00 Lunch

- 13:00~13:30 Award ceremony at Kagawa International Conference Hall  
Award ceremony (by selection committee in International Committee members)  
Chair: Masaaki Tokuda  
Rare Sugar Award  
Chair: Saisamorn Lumyong  
Poster award (1 Best Poster Award & 2 Poster Awards)
- 13:30~14:00 Closing ceremony  
Closing remarks: Ken Izumori & George Fleet