
Oral sessions | Crop Genetics and Physiology | O43: High Quality Food and Ingredients

[O43] High Quality Food and Ingredients

Chair: Yoji Nitta (Fukushima University, Japan)

Chair: Akiko Fujita (Satake Corporation, Japan)

Thu. Sep 9, 2021 5:00 PM - 7:00 PM Room 4 (Oral) (Crop Genetics and Physiology)

5:55 PM - 6:10 PM

[O43-04]Recent Trend of Ultra-Fine Structure of High-Quality and - Palatable Rice in Japan

(Invited Speaker)

○Yoji Nitta (Faculty of Food and Agricultural Sciences, Fukushima University, Japan)

Ultra-fine structure of cooked rice were clarified using a scanning tunneling microscope with a specific preparation procedures especially focused on rice products of Fukushima Prefecture including Coastal Region. Three rice specimens which were cultivated and harvested in Fukushima Prefecture, Japan in 2018. Milled rice grains (90% milling) of cultivar 'Koshihikari' (harvested in Minamisoma city) and 'Hitomebore' (Kawauchi village) from Coastal Region ('Hamadori') locates in the Pacific Ocean side were used. Rice grains were subjected to measure palatable-related characters by taste-evaluation machine. Cooking was conducted using 'IH pressure rice cooker', followed by freeze-drying with 'rapid freeze-vacuum lyophilization method'. Then specimens were coated surface with Pt or OsO₄, and observed using electron microscope. Cultivar differences could not been observed in this experiment. In bright portions (BP) on the surface of cooked rice grain, a fine fiber-like structure and a membrane-like structure are developed with spongy-like hole inside. In surface layer of dark portion (DP), high-density-accumulation structure of gelatinized starch was observed on the surface. Though thickness of the high-density-accumulation structure ranged from thick to thin, indicates stickiness differences when eating. In addition, size of spongy-like hole was larger towards the center of the grain, seems to contribute elasticity. Conclusion is as follows: (A) Rice products of Fukushima Prefecture including Coastal Region has high-quality and palatable characters. (B) Though DP of cooked rice grain was evaluated as low-palatability so far, its inner structure has high-quality and palatable character when cooking by specific rice cookers especially in recent-developed rice cultivar/strain.