

Session I Lecture 3

**Structural variation of starch affecting
the physical properties and digestibility of starch-based
food ingredients**

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Summary

Starch is the main component of rice, which is a staple food in Japan and is widely used as a material for food processing. The structural and physicochemical properties of starch have a significant impact on the health-related properties of products. The structure of starch is determined by enzymes involved in its synthesis, and a number of rice cultivars with genetic differences in starch-related enzymes have been developed, including those developed at NARO. We have used different cultivars to study the effects of starch structure on the physical properties of rice noodles. Cooking method is another factor that affects the physical properties and digestibility of cooked rice. Resistant starch and processing methods that alter the digestibility can be helpful in controlling the postprandial blood glucose level. We also present examples of modification of starch to alter water absorption and pasting properties. Understanding the changes in the chemical and physical properties of starch and starch products will undoubtedly be important for fermentation and other applications.