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Structure and Thermal Properties of Several Acorn Starches

Yoshimi Sugimoto¹⁾, Naoyoshi Inouchi²⁾, Mayumi Miyazaki²⁾, Hiroaki Morikawa²⁾ and Hidetsugu Fuwa²⁾

1) Department of Food and Nutrition, Faculty of Agriculture, Kinki University

2) Department of Applied Biological Science, Fukuyama University

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Starch granules were prepared from 8 kinds of acorn; Kunugi (*Quercus acutissima* Carruth), Konara (*Q. serrata* Thunb), Naragashiwa (*Q. aliena* Blume), Shirakashi (*Q. myrsinaefolia* Blume), Matebashii (*Lithocarpus edulis* Nakai), Tuburajii (*Shiia cuspidata* Makino), Arakashi (*Q. glauca* Thunb), and Sutajii (*Shiia Sieboldii* Makino, *Castanopsis cuspidata* Schottky var. *Sieboldii* Nakai). Granular sizes, contents of the apparent amylose (26-28%), and chain length distributions of amylopectin of the acorn starches are similar to those of maize starch. Chain length distributions measured by HPAEC-PAD showed that amylopectinns of Sudajii and Tsuburajii starches had low amounts of chains with DP 9-17 in comparison to maize starch and the other acorn starches. Each acorn starch showed different gelatinizing temperature by DSC; those of Arakashi and Tuburajii starches had lower values similar to potato starch and that of Kunugi had higher values similar to sweet potato starch. On the heats of gelatinization the acorn starches were different from rice and maize starches and similar to potato and sweet potato starches. Peak viscosities of the acorn starches by RVA were higher than rice and maize starches and similar to sweet potato and wapoto starches.

Key words: acorn starch, amylose content, characteristics of gelatinization, chain length distributions of amylopectin

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