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Characteristics of *Java* Taro Starches and Physical Properties of Acid- and Heat-treated Taro Starches

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Characteristics of taro corm starches of four kinds were studied as follows: *Java* and *Celebes* were harvested in Indonesia; *Uhan* in China; *Satoimo* in Japan. In addition, effects of acid- and heat-treatments on physical properties of native *Java* starch were examined. The particle size of *Java* starch was in the range of 3-17 μm with about 50% distribution of size of 9-13 μm. From SEM observation, the size of starch granules for *Java*, *Celebes*, *Uhan* and *Satoimo* was 3.0-13.0, 1.0-4.8, 1.5-5.8 and 0.5-3.4 μm, respectively. The native *Java* starch was mostly spherical, but some portions of the surface were square with a larger size than for other starch samples. The amylose content of the *Java* sample determined by the blue value method was 20.5% and number-average degree of polymerization was 880 and 2920 for amylose and amylopectin, respectively. The average chain length of amylose or amylopectin was 17 or 19, respectively. From the result of X-ray diffraction, the crystalline pattern of *Java* starch was A type. As for DSC results, *Satoimo* starch was gelatinized at a higher temperature, while the enthalpy was lower than those of other samples. In contrast, starch of *Celebes* or *Uhan* was gelatinized at lower temperature, as compared with native *Java* starch. The gelatinization enthalpy of heat-treated *Java* starch at 50°C showed the highest value among all samples. But, physical properties (DSC and SEM) of acid-treated *Java* starch were not distinctly different from those of native *Java* starch.

Key words: taro corm, starch, gelatinization, thermal property, scanning electron microscopy (SEM)

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