

Characteristics of Sorghum (*Sorghum bicolor* L. Moench) Flour on the Soaking Time of Peeled Grains and Particle Size Treatment

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Abstract : *Sorghum bicolor* (*Sorghum bicolor* L. Moench) has the potential as a flour for gluten-free food products. Sorghum flour production needs grain soaking treatment. Soaking can reduce the tannin content which is an anti-nutrient, so it can increase the protein digestibility. Fine particle size decreases the yield of flour, so it is necessary to study various particle sizes to increase the yield. This study aims to determine the characteristics of sorghum flour in the treatment of soaking peeled grain and particle size. The material of white sorghum varieties KD-4 from farmers in East Java, Indonesia. Factorial randomized factorial design (two factors), repeated three times, factor I were the time of grain soaking (five levels) that were 0, 12, 24, 36, and 48 hours, factor II was the size of the starch particles sifted with a fineness level of 40, 60, 80, and 100 mesh. The method of making sorghum flour is grain peeling, soaking peeled grain, drying using the oven at 60°C, milling, and sieving. Physico-chemical analysis of sorghum flour. The results show that there is an interaction between soaking time of grain with the size of sorghum flour particles. Interaction in yield of flour, L* color (brightness level), whiteness index, paste properties, amylose content, protein content, bulk density, and protein digestibility. The method of making sorghum flour through the soaking of peeled grain and the difference in particle size has an important role in producing the physicochemical properties of the specific flour. Based on the characteristics of sorghum flour produced, it is determined the method of making sorghum flour through sorghum grain soaking for 24 hours, the particle size of flour 80 mesh. The sorghum flour with characteristic were 24.88% yield of flour, 88.60 color L* (brightness level), 69.95 whiteness index, 3615 Cp viscosity, 584.10 g/l of bulk density, 24.27% db protein digestibility, 90.02% db starch content, 23.4% db amylose content, 67.45% db amylopectin content, 0.22% db crude fiber content, 0.037% db tannin content, 5.30% db protein content, ash content 0.18% db, carbohydrate content 92.88 % db, and 1.94% db fat content. The sorghum flour is recommended for cookies products.

Keywords : characteristic, sorghum (*Sorghum bicolor* L. Moench) flour, grain soaking, particle size, physicochemical properties

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