

Evaluation of Locally Available Cassava (*Manihot esculenta*) Varieties for Starch Production and Physicochemical Characterization of Cassava Starch

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The present study was conducted to analyze and compare the physicochemical and functional properties of cassava starches extracted from eight different local cultivars of cassava (MU 51, Suranimala, HORDI MU51, Swarna, Kirikawadi, CARI555, CA01, Shani), harvested from Horticultural Crop Research and Development Institute, Gannoruwa, Sri Lanka. In addition, the basic morphological characteristics and some chemical properties of cassava plants, tubers, and leaves were also evaluated. The extracted starch yields of selected cassava varieties ranged between 53.74-69.35%. The moisture, ash and pH values of cassava starch from different varieties ranged between 10.04-10.64%, 0.03-0.17%, 5.51-6.26, respectively. The amylose content of cassava starch varied as 17.55-18.66%, however, the values were not significant at $p < 0.05$. The highest total phenolic content (0.03 mg GAE g⁻¹) of cassava starch was reported by the Shani variety. The L* (97.18-98.69), a* (-0.63 to -0.77), b* (1.64-2.15) values and the whiteness index (8.66-9.64) of the cassava starches were also evaluated. The average particle size of starch granules significantly varied between 2.55-9.75 μ m. The water absorption capacity (0.76-0.96%), swelling power (5.03-6.46%), solubility index (0.0077-0.0181%) and syneresis (29.04-36.18%) varied considerably among the cassava varieties. The gelatinization temperature of cassava starch ranged from 63.90-67.40 °C and the texture parameters of the cassava gels were evaluated using the Brookfield Texture Analyzer. The keeping quality of cassava starch was observed in polyethylene and aluminium packages for three months. The Cyanogenic glucoside content of cassava starch was determined by spectrophotometry and the values (4.69-13.05 mg kg⁻¹) varied significantly at $p < 0.05$. The study revealed that the physicochemical and functional properties of cassava starches were greatly influenced by the variety of cassava, and these findings will eventually help to identify the potentials of cassava starch in food and non-food uses.

Keywords: BMI, Cardio-Respiratory Fitness, Heart Rate Reserve Method Intensity Training