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A comparative study of the chemical composition and water absorption capacity of five locally available sweet potato (*Ipomea batatas* Lam) cultivars

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A study was carried out to analyse the levels of starch, protein, crude fat, crude fibre, ash, minerals and the swelling capacity of five locally available cultivars of sweet potatoes. Three white to light yellow fleshed types (swp1 – Wariyapola red, swp3 – Wariyapola white, swp5 – Malaysian variety) and two light orange fleshed types (swp4 – Pallepola variety and swp3 – CARI 273) were randomly selected from Horana and Dambulla areas and prepared for analysis 2 – 3 days after harvesting. Crude flour samples from each type was prepared by the oven drying of cut flakes at 40 ℃ for 30 hours followed by grinding. Starch was extracted from fresh tubers by wet milling and sedimenting. Chemical composition was analysed using AOAC (1980) methods while starch contents were analysed using the acid hydrolytic method. Three replicates from each sample were oven-dried and ashed to determine the mineral elements by Atomic Absorption Spectrophotometry.The swelling power (SP) of flour and starch was determined according to the method of Gunaratne *et al.*(2010) and calculated as g/g (db). Macronutrients and mineral constituents were calculated on dry weight basis and the results were subjected to ANOVA and Tukey's HSD test ($p < 0.05$) using the statistical software Minitab to compare the crude levels of nutrients in the studied cultivars. Starch levels in the studied cultivars are significantly different at $p < 0.05$ and swp7 contained the highest (64.1 ± 0.1%) while swp5 contained the lowest (43.0 ± 0.6%). The protein levels ranged from 1.2 ± 0.1 to 3.0 ± 0.1% and the crude fat levels in tubers varied from 1.1 ± 0.1 to 1.7 ± 0.1%. The crude fibre contents in tubers ranged from 2.1 ± 0.2 to 13.6 ± 0.3% and swp7 contained a significantly high level of fibre ($p < 0.05$) than the other cultivars. Swp5 cultivar contained a significantly higher amount of calcium and magnesium while swp3 and swp7 contained a significantly higher level of iron. The highest amount of potassium was found in swp3. Swp3 and swp7 cultivars showed a high level of nutritional significance while all other cultivars except swp7 flour and starch showed a great deal of swelling that can be applied as possible jelling and/ or thickening agents in the food industry.

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