Extraction and Characterization of Starch Derived from Buthsarana (*Canna indica*), Hulankiriya (*Maranta arundinacea*) and Kiri Ala (*Xanthosoma sagittifolium*) Grown in Sri Lanka

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Starch provides 50–70% of the energy requirement in the human diet. In addition, starch has a great potential to serve as an important ingredient in the food industry due to its unique properties. Different types of roots and tuber crops grown in Sri Lanka can be used as a source of starch to be utilized in various food applications. However, most of them are considered underutilized crops. The extraction and characterization of starches from these underutilized crops hold significant value, as they can be effectively used in various applications. Therefore, the objective of this study was to extract and characterize the starches derived from Buthsarana (*Canna indica*), Hulankiriya (*Maranta arundinacea*) and Kiri Ala (*Xanthosoma sagittifolium*). Starch was extracted using the wet processing method, followed by vacuum drying and sieving. Starch granules were observed under the light microscope. Moisture content, bulk density, and yield were determined using standard methods. Amylose content was determined using the colourimetric method. Centrifugation methods were used in the determination of water holding capacity, oil holding capacity, solubility and swelling power. Round or oval shaped starch granules were observed in *C.indica* and *M.arundinacea* starches, and round or hemispherical shaped granules were observed in *X.sagittifolium*. Moisture content and bulk density of starches varied in the range of 10.17-11.31% and 0.48-0.71 g/cm^3, respectively. The highest amylose content (24.73%) was observed in *C.indica* starch. There were no significant differences ($p>0.05$) in oil holding capacity and solubility among starches. Water holding capacity of starches varied in the range of 0.43-0.58 g/g. The swelling power of *C.indica* (13.93 g/g) starch was significantly higher ($p<0.05$) compared to that of *X.sagittifolium* (5.62 g/g) and *M.arundinacea* (7.63 g/g) starches. The study revealed that the selected underutilized root and tuber starches possess promising physico-chemical properties, making them potential ingredients in the food industry.

Keywords: Starch, physico-chemical properties, Underutilized root and tubers

Acknowledgement: This research was supported by the University of Peradeniya through University Research Grant (grant no: URG/2022/02/Ag)