

Extraction and Characterization of Starch from Sri Lankan *Cassava*

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Abstract

The worldwide market for polymers is rapidly on the rise due to the high demand for consumer as well as technological applications. Bio-based polymers are considered as a potential replacement for petroleum-based polymers to minimize harmful environmental impact. Bio-based polymers are defined as polymers originated from biological sources. Most of the bio-based polymers are produced from bio-based monomers. Starch is one example of a simple bio-based polymer, that has been known and widely used for centuries. Starch can be used in packaging, textiles and construction applications. Starch can be extracted from different types of plant based materials such as cassava tubers. Cassava is cultivated in Sri Lanka in most of the districts for local and export market. Annual production of Cassava in Yala and Maha season in 2016 was about 300,000 MT.

The objective of this research was to extract and characterize starch from Cassava tubers. In this study, Sri Lankan cassava (*Manihot esculenta*) was selected as the main raw material for starch extraction. The cassava tubers were sourced from the Kalutara district in Sri Lanka for this study. Starch was extracted from cassavas tubers by crushing, blending and sedimentation. First, the cassava tubers were washed, peeled and chopped into small pieces. Then, they were ground in a high speed blender for 5 minutes. The blended pulp was then suspended in 10 times its volume of water and stirred for 5 minutes. This product was filtered using a muslin cloth and the filtrate was allowed to stand for two hours. Then the product was kept for sedimentation. Finally, it was completely dried in the sun light to convert the starch in to dry powder. The extracted product was characterized by Fourier transform infrared spectroscopic technique (FTIR). Experimental results showed that 20 wt.% of starch could be extracted from the cassava that was tested. The extracted starch can be used for different applications as a bio- based polymer.