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# SYNTHESIS AND APPLICATION OF NANOSTARCH CRYSTALS FROM CASSAVA FIBROUS RESIDUE

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## Abstract

The nanocrystals can be prepared from starches of various sources such as maize, pea, potato, etc. Extensive research is carried out on synthesis of nanostarch crystals from the above-mentioned sources. Since only limited literature is available on cassava starch, the objective of the present work is to synthesize nanostarch crystals from cassava fibrous residue and compare the results with other nanostarches. India is the sixth largest producer of cassava in the World and Tamil Nadu is the largest producer in India. Cassava is one of the important crops in tropical countries. 5% (w/w) of cassava fibrous residue dissolved in 3.16 M sulphuric acid was incubated in a shaker at 37°C and 100 rpm for 5 days. The hydrolysis by acid removes amorphous starch and produces nanocrystals. The nanostarch was characterized by NMR spectroscopy, SEM, and TEM. The nanocrystals obtained can be used as fillers in natural polymers for the production of matrix. The matrix can have high mechanical and thermodynamic properties to water and oxygen. Also, the nanostarch has wide application in the future for the production of nanocomposites with enhanced properties. Thus, adding value to cassava processing industries, cassava fibrous residue can be the potential feedstock for synthesis of nanostarch crystals.

**Keywords:** *Cassava, Nanostarch; NMR; SEM.*

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