CHARACTERIZATION AND MOISTURE SORPTION STUDY OF ULTRASONICALLY AND SPRAY-DRIED GREEN BANANA (MUSA CAVENDISH) STARCH

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During banana commercialization and post-harvest handling in Brazil, large quantities are lost due to the fact that most production is intended for in natura consumption. Losses can be reduced by the processing of rejected fruits and the utilization of green banana starch. Starch is commonly used for many applications in food processing and changes to its properties are currently made in order to achieve particular properties. An innovation option for modifying starches is sonication, which consists of treatment of the polymer with ultrasound. Ultrasound is generated with either piezoelectric or magnetostrictive transducers that create high-energy vibrations, which are amplified and transferred to a probe, which is in direct contact with the fluid. In this work, ultrasonic wave propagation and the spray dryer technique were applied to verify their effect on characterization and moisture sorption of green banana (Musa cavendish) starch (GBS). The starch treatment and drying conditions were as follows: GBS A: dried in a conventional oven; GBS B: dried in a spray dryer; GBS C: ultrasound frequency/dried in a conventional oven; and GBS D: ultrasound frequency/dried in a spray dryer. GBS B and GBS D showed a decrease in amylose content when compared to GBS A and GBS C. Ultrasound treatment reduced the resistant starch content, a pattern that was the most evident in GBS D. The adsorption isotherms for green banana starch presented Type II behavior, and the GAB model best represented all experimental data. Conventional drying, without ultrasound treatment, lead to a high mono-layer value.