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Flexible edible films based on babassu: Physical and barrier properties

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The trend towards environmental preservation and the need for new sources of raw materials to reduce dependence on oil are a major incentive for the development. The use of edible and biodegradable films obtained from renewable materials, thus reduce the use of petroleum-derived polymers. The babassu (*Orbignya sp*) is a palm of great socio-economic importance in Brazil, especially in the states of Maranhão, Piauí, Tocantins and Mato Grosso. The babassu consists of exocarp, mesocarp and endocarp. The mesocarp is composed of 60% starch. The starch structure resembles the structure of starch found in cereals such as corn. The starch is widely used in the preparation of biodegradable films for its thermoplastic capacity. The starch gelation temperature ranges from 63-73ºC, similar to corn starch, in addition to presenting a considerable amount of amylose. In this context, the objective of this study was to use the flour made from babassu mesocarp to produce biodegradable films by thermoplastic extrusion process. For the process, an extruder brand BGM (EL-25 model, SãoPaulo, Brazil) was used with the processing conditions demonstrated by Farayde (2009). For the preparation of the sample babassu mesocarp flour was used and as a plasticizer, 30% glycerol in relation to the mass of flour. After extrusion, the film was conditioned for 48 hours at 25°C and 50% RH so as to be characterized as to its thickness, permeability to water vapour (PWV) and for its solubility in water and acid. The film extrudate showed a dark coloration through the naked eye and was malleable to the touch and had an average thickness of 0.5353 mm. The babassu film was 100% soluble in acid and approximately 40% soluble in water.

Biography

Farayde M Fakhouri is a Food Engineer at Universidade Estadual Paulista, and has done her Masters and PhD at the University of Campinas and Postdoctorate in the State University of Londrina in new materials for packaging. She is a Professor at the Federal University of Grande Dourados, Research Collaborator of the Department of Materials Engineering and Bioprocess of FEQ/Unicamp, member of the groups searches LMEI (Unicamp), MFBIOPACK (UFGD) and POLIBIOTEC (UEL), supervisor and founder of the Junior Company (EJIPTA/UFGD). Currently, she is at a postdoctoral program at the Polytechnic University of Catalunia at the Faculty of Materials Science and Engineering. Her experience is focused on packaging from renewable sources, thermoplastic extrusion and functional foods.

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