Nanotechnology Biobased on the Petiole of (Mauritia flexuosa) for Application in Sustainable Design

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The production, recycling and pollution indexes generated by industries are constantly discussed around the world, in search of alternatives that solve environmental problems. In this sense, the present work aims to extract cellulose nanocrystals from the buriti petiole with potential for the technological production of sustainable design. For this purpose, PB (Petiole do Buriti) was extracted and PLA was bleached with chemical elements for domestic use. The morphology and thermal properties of PLA / PB were obtained through chemical processes in the oxidation of hydrogen peroxide, bleach, ultra fast bleach and washing powder. For the extraction of nanocrystals, samples of pure PLA were subjected to heating from room temperature to 200º C. Then they were cooled to a temperature of approximately -20º C, the material was visualized in an electron microscope and beam of light discharged for leisure. A comparative analysis was made between the buriti fiber, which is renewable; recyclable and biodegradable, different from glass. From there, different prototypes of biodesign were generated, by cooking and thermoformat. After this stage, mechanical tests were carried out by visual inspection and by traction of the biocomposites and biodesigns, where the cooking process presented 10% of failures in its structure and the thermoformate only 3%, inferior to the industrial model, which was 6%. It also evaluated the result of biodegradation, in the soil it lasted 12 weeks and in the water 8 weeks. PB makes it an innovative material with great possibilities for use in industry and the market.

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