

# **VALIX: Obtaining and Implementing Polysaccharides (Banana, Cassava and Yam Starch) in the Gradual Replacement of Synthetic Polymers Used in the Manufacture of Packing or Packaging**

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Research main objective was to create a new alternative packing material based on banana, cassava and yam starch, in order to reduce the environmental implications produced by today's plastic industry. The protocol of Salcedo and contributors, 2010 was used for cassava and yam starch extraction process. In the other hand, for banana starch the protocol of Flores and contributors, 2004 was used. After the whole tests, the most appropriate material for extraction was the banana, with 9.9% of starch. After the material analysis the polymerization process was carried out (Malajovich, 2012) in order to ensure the film formation. Glycerin (8ml/100ml) was used as plasticizing agent, adding hydrochloric acid and urea as catalysts. Physical-mechanical tests of humidity, mechanical resistance and infrared spectrum were carried out. The tests shown lower percentages of humidity (8.3%) on yam films with HCL samples. On the other hand, banana with HCl was the most resistant film (6, 37 N resistance); starches structures were similar in all cases, but there were some structural differences compared with the cassava polymer. The degradability of the films will be tested in next phases of the research and the possibility to obtain biomaterials, which will be mixed with the starch films and synthetic polymers, possibly with Polyethylene Terephthalate (PET), is still being considered.