




Functionality and characterization of modified starch films with pineapple leaf fibers

Ramírez-Hernández Aurelio ^a, Cruz-Valencia Shardey Mextlisol ^a, Delia E. Páramo-Calderón ^b,
Ricardo Acevedo-Gómez ^a, González-García Gerardo ^c, Cirilo Nolasco-Hipolito ^d, Báez-García José Eduardo ^c,
Conde-Acevedo Jorge Carlos ^a ✉, Aparicio-Saguilán Alejandro ^b  ✉

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Abstract

The objective of this work was to modify banana starch with pineapple leaf fibers (PALF) and its production of biodegradable films. The reaction conditions of the starch modification were a Starch/PALF mass ratio of 50, a time of 1 h and a temperature of 140°C, to obtain a yield of 41.18%. Characterization by FTIR and NMR confirmed that the chemical reaction was carried out. XRD and TGA analysis showed that the crystalline zones of the starch were affected during the modification and the product obtained is thermally less stable compared to unmodified starch. The modified starch showed a lower pasting profile compared to the native starch; however, the modified starch showed the ability to form a film. The starch-PALF films were obtained by the casting method and partially characterized. These films presented better mechanical properties compared to the unmodified films. Also, these films could compete with conventional non-biodegradable plastics.

Introduction

The great demand for products from hydrocarbon sources, such as synthetic polymers, has caused a danger for the rest of living beings when these are discarded into the environment. This is due to the fact that many of these products are very poorly biodegradable, causing an environmental