



ABSTRACT

Among the raw materials used to make biodegradable plastics, starch has high potential; however, it must be modified to improve its film-forming properties. In this study, starch isolated from physiologically immature plantains (*Musa paradisiaca* L.) was modified chemically by oxidation with NaOCl with three concentrations of active chlorine (0.5, 1.0 and 1.5 % v/v) and acetylation using acetic anhydride. The starches were characterized chemically, physically, and thermally: quantification of carbonyl, carboxyl and acetyl groups; proximal chemical analysis; Fourier transform infrared spectroscopy; color determination; and analysis of thermal variables using differential scanning calorimetry. The values of quantified functional carbonyl, carboxyl and acetyl groups corroborated the effectiveness of the chemical treatments, which was verified by Fourier transform infrared spectroscopy. Modification by oxidation reduced the content of proteins, lipids and ash. The L^* parameter characterized starch color since it was a direct measure of its whiteness. This value increased with increasing levels of oxidation; modification by acetylation did not significantly affect this parameter. The thermal parameters initial, peak and final gelatinization temperatures increased when the active chlorine concentration increased, while gelatinization enthalpy decreased, indicating a structural alteration of the modified starches. This was confirmed by their amylographic profile. With dual chemical modification, it was possible to improve the physical and chemical properties of native plantain starch.

<http://www.colpos.mx/agrocien/Bimestral/2010/abr-may/abr-may-10.html>

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