



SOME INTRINSIC AND EXTRINSIC FACTORS OF ACETYLATED STARCHES: MORPHOLOGICAL, PHYSICO-CHEMICAL AND STRUCTURAL CHARACTERISTICS.

ABSTRACT

Degree substitution (DS), morphological characteristics, X-ray diffraction (XRD), pasting properties, thermal properties and amylopectin chain length distribution were used to study the effect of botanical source (potato starch, PS; and maize starch, MS) and reagent type (acetic anhydride and vinyl acetate) on starch acetylation. The reagent type produced a different effect depending on the botanical source: for MS, the reaction with acetic anhydride produced higher DS than PS, whereas that in the reaction with vinyl acetate resulted in an inverse pattern. In general, modified starches had a Maltase cross, except for PS when acetylated with acetic anhydride. Native PS had the highest crystallinity level and the acetylated starches had a decreased amount of crystallinity (between 10% and 12 %) compared to the native starches. Acetylation produced a decrease in pasting temperature, and changes in the pasting characteristics were more evident with higher DS. Structural changes in starch components due to the acetylation reaction produced a decrease in the temperature and enthalpy of gelatinization. In general, acetylated starches had minor retrogradation. Regardless of reagent used, acetylated MS had higher retrogradation than acetylated PS. Higher DS values resulted in greater amounts of short chains in both starches.

<http://rmiq.org/new%20page/eVol10No3.html>

CEPROBI - IPN

Autores: María del Carmen Núñez Santiago, Francisco Javier García Suárez, Felipe Gutiérrez Meráz, Mirna María Sánchez Rivera, Luis Arturo Bello Pérez*

Revista Mexicana de Ingeniería Química. Volume 10, Issue 3, pages 501 - 512.