Physiochemical properties of sago starch modified by acid treatment in alcohol

Abstract

Abstract: Sago starch is usually chemically modified to overcome and improve the unstable properties of native sago starch during processing. In this study, sago starch was treated in hydrochloric acid in the presence of methanol, ethanol and 2-propanol at 450°C for 1 hour. Granule size, granular structure and solubility of the modified starch were investigated. Results showed that recovery yields of the modified starch were in excess of 57% with a maximum recovery of 94%, and the average granule size of the starch ranged from 24.8 to 30.1 μm. Images under light microscope revealed some internal fissures in starch granules after acid-alcohol treatment. Acid concentration had a pronounced effect on the degree of polymerization. The degree of polymerization progressively decreased as the carbon number of the alcohol increased. This study showed that sago starch can be modified through hydrolysis and alcoholysis to give various limit dextrins with high solubility.

Keyword: Sago starch; Acid hydrolysis; Alcoholysis; Starch degradation