

Physicochemical characterization of microcrystalline cellulose extracted from kenaf bast

ABSTRACT

Microcrystalline cellulose (MCC) was successfully prepared from bleached kenaf bast fiber through hydrochloric acid hydrolysis. The influence of hydrolysis time (1 to 3 h) on the MCC physicochemical properties was examined. Scanning electron microscopy (SEM), X-ray diffraction (XRD), particle size analysis, Fourier transform infrared spectroscopy (FT-IR), and thermal gravimetric analysis (TGA) were utilized to characterize the isolated MCC. According to FTIR analysis, the chemical composition of MCC was not changed with the reaction time. The reaction times, however, did affect the thermal stability of MCC. The thermal stability decreased linearly with increasing hydrolysis time. The optimum hydrolysis time was determined based on the morphological, structural, and thermal properties of the kenaf bast MCC.

Keyword: Kenaf bast; Acid hydrolysis; Microcrystalline cellulose; Reaction time; Structural properties