

ISOLATION AND CHARACTERIZATION OF CELLULOSE MICROCRYSTALLINE FROM DATE PALMS

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Abstract. In this study, microcrystalline cellulose (MCC) particles have been isolated from date Palms cellulose using HCl acid hydrolysis method. The obtained MCC has been fully characterized through infrared spectroscopy (FTIR), scanning electron microscopy (SEM), X-ray diffraction (XRD), and differential scanning calorimeter (DSC). The obtained results showed that the extracted cellulose microcrystalline exhibited similar properties with respect to the commercial one. FTIR demonstrated that most hemicellulose and lignin of the raw fibers were removed during the extraction process. XRD spectra of cellulose revealed that the isolated date palm-MCC was identified as cellulose type I with high crystallinity index than cellulose (CrI date palm MCC: 75% > CrI α -cellulose: 69 %), due to degradation of the amorphous components. According to DSC analyses, the MCC sample prepared presented higher thermal stability properties (> 330 C°), thus making it promising candidate for use in many fields such as reinforced-polymer composites, pharmaceuticals and food industry.

Keywords: microcrystalline cellulose, cellulose, Date Palm.