
ABSTRACT

Cellulose is a natural polymer raw material mostly found in universe. Cellulose has brilliant applications in almost every field of life. Cellulose can be modified physically and chemically into different derivatives. These derivatives now a day's are used as bio-sustainable and eco-friendly environmental compound to overcome the global warming from environment. Efficient utilization of cellulose as a material source has been challenging, especially in chemical industry due to poor solubility. In this project, cellulose has been extracted through alkaline hydrolysis extraction from cotton hull. Different concentrations of NaOH were used to get maximum yield of cellulose. The isolated cellulose was successfully converted into cellulose acetate and cellulose maleate by esterification by using NaOH as alkali, glacial acetic acid and H₂SO₄ and maleic anhydride respectively. The product and its derivatives were characterized by SEM and FT-IR. According to SEM, it has granular structure along-with fine crystals of cellulose, while FT-IR analysis represents that there are large number of hydrocarbons in the sample I, II and III showing -CH-stretching of alkane at 2903.66 cm⁻¹, 2898.02 cm⁻¹ and 2880.91 cm⁻¹ respectively, depicts -OH-stretching of carboxylic acid at 3338.03 cm⁻¹, 3338.08 cm⁻¹ and 3055.77 cm⁻¹ respectively and C-O-C bending of ester linkage 1158.97 cm⁻¹, 1155.76 cm⁻¹ and 1216.11 cm⁻¹ respectively.

Cellulose derivatives can be used as: in the formation of semi-permeable membrane, stabilizing, coating and thickening agent, bio-adhesives and fillers in solid dosage.