

ABSTRACT

Cellulose was extracted from wheat straw with 53% yield. The cellulose crystals were synthesized by hydrolysis using 30% H₂SO₄ solution. The surface of nanocellulose (CNCs) which is incompatible for various hydrophobic moieties was made compatible by modifying the surface with cationic surfactant (CPC) and grafting of lactic acid (LA). The optimum conditions for the modification were determined by response surface methodology (RSM). The modification of polymer surface was confirmed by FTIR analysis. Among different materials cellulose showed excellent swelling (821%), oil holding (284%), water holding (572%) capacities. The functional groups introduced on the surface of CNC greatly reduced the biodegradability of the modified materials.