

Fabrication and Assessment of Poly (butylene succinate)/ Poly (ϵ -caprolactone)/Eucomis Autumnalis Cellulose Bio-Composites for Tissue Engineering Applications

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Abstract : This study investigates the fabrication and characterization of bio-nanocomposites consisting of poly (butylene succinate) (PBS) and poly (ϵ -caprolactone) (PCL), reinforced with cellulose extracted from *Eucomis autumnalis*, a medicinal plant. Bio-nanocomposite films were prepared using the solvent casting method, with cellulose content ranging from 1 to 3 wt%. Comprehensive analysis was conducted using FTIR, SEM, TEM, DSC, TGA, and XRD, to assess morphological, thermal, and structural properties. The results indicated significant improvements in the thermal stability and morphological properties with increasing cellulose content, showcasing the potential of these materials for tissue engineering applications. The use of cellulose extracted from a medicinal plant highlight the potential for sustainable and biocompatible materials in biomedical applications.

Keywords : Bionanocomposites, poly(butylene succinate), poly(caprolactone), eucomis autumnalis, medicinal plant

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