

Characterization of bio-cellulose produced by cell-free enzyme system

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Bacterial cellulose possesses unique structural features and extra purity. Main limitations overshadowing the broad range applicability of BC are lower biocompatibility and lack of antimicrobial properties. Although, BC composites with biocompatible materials have been synthesized, the bactericidal properties could not be conferred to it by addition of nanomaterials since they kill microbial cells during in situ composite synthesis. Currently, we have developed a cell-free enzyme system for bio-cellulose production. Bio-cellulose was characterized for its structural and physiological properties such as surface and cross section analysis, crystalline features, arrangement of bonds, thermal properties, water holding capacity, and water release rate using different techniques. All the characteristic features of bio-cellulose were comparable to BC. This indicates the potential capability of bio-cellulose as substitute of BC to develop nanocomposites with antibacterial features.