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NanoCrystals form of Cellulose-ZnO-Ag composite production, TEM description and microbial sensitivity

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Abstract : Green nonmaterial is a term called for nanocrystals prepared from bacterial cellulose depending on easy production without hazardous chemical treatment and renewable nature. In our study, we use a carboxymethyl cellulase enzyme from *Aspergillus niger* for preparation of bacterial cellulose nanocrystales (CNCs). Also, the synthesis of ZnO-Ag heterostructure nanoparticals was done by using CNCs as stabilizing agent and forming CNCs-ZnO-Ag composites. The size and shape of CNCs-ZnO-Ag composite was studied using transmission electron microscope (TEM) with average size of 6-50 nm and the shape was optic rounded and oval. Finally, These CNCs-ZnO-Ag composite have been examined for their antimicrobial activity using various pathogenic microorganisms and recorded highly activity.

Keywords : Cellulose NanoCrystals, Carboxymethyl cellulase, TEM, Antimicrobial activity.

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