**ROS mediated antibacterial action of ZnO/Corn starch hydrophobic films for packaging applications**

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**Abstract**: The present study deals with the novel synthesis of cornflour-based biodegradable film in the presence of zinc oxide nanoparticles (ZnO NPs) as nanofiller through solution casting method. ZnO NPs with attractive antibacterial properties have been widely used in the field of antimicrobial films. However, the ZnO NPs were prepared through precipitation method using carboxymethyl chitosan as stabilising agent. The absorbance peak at 350 nm confirmed the formation of stable, monodispersed ZnO NPs. High resolution-transmission electron microscopy analysis showed crystalline nature of ZnO NPs with hexagonal morphology. The reactive oxygen species mediated antibacterial action of ZnO is analysed and possible mechanism of antibacterial action of ZnO is proposed*.* Fourier transform infrared analysis of ZnO/corn starch film revealed changes in functional groups as a result of hydrogen bond interaction between matrix and ZnO NPs. The nanomaterial inclusion altered the surface morphology of starch film with antimicrobial effectiveness against *E. coli* and *S. aureus* bacterial strains. Along with this, their current application and future perspectives in the food sector are also explored.

Key words: ZnO nanomaterial, starch film, antibacterial, Reactive oxygen species