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# Synthesis and characterization of antibacterial silver-alginate - chitosan bionanocomposite films using UV irradiation method

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**Abstract :** A simple, UV-based method for the preparation of alginate-silver nanoparticles-chitosan composite films is described herein. Alginate, a polysaccharide was simultaneously used as a natural stabilizer and reducing agent of silver ions (Ag<sup>+</sup>) delivered from silver nitrate solution. The properties of silver nanoparticles (Ag NPs) in alginate and alginate-Ag NPs-chitosan (Alg-Ag NPs-CTS) composite films were investigated in terms of their surface plasmon resonance (SPR), crystalline structure and morphology. The average diameter size, the degree of swelling and functional groups distribution were also addressed. Antibacterial activities were carried out against both Gram<sup>+</sup> and Gram<sup>-</sup> bacteria cells; the synthesized nanocomposite films displayed an interesting antibacterial activity. The perspectives for a potential use of these nano-composite films in areas such as biomedical engineering may seriously be considered.

**Keywords :** alginate, silver nanoparticles, green synthesis, chitosan.