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# Biosynthesis, Characterization and Interplay of Bacteriocin-Nanoparticles to Combat Multidrug Resistant PathogensAsma Ansari,

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**Abstract:**In the contemporary consequence, nanoparticles have emerged as a novel antimicrobial agent due to their high surface area to volume ratio and the inimitable physicochemical properties. The emergence of multidrug resistant pathogens could unlock the potential of nanoparticles to combat infectious diseases. Over few years, nanoparticles have been associated with not only the physical and biological but also numerous pharmaceutical applications. Metallic nanoparticles have a substantial scientific interest because of their distinctive physicochemical and antimicrobial properties. The aim of the current study is to enhance the antibacterial potential of purified bacteriocin by combining bacteriocin and antibacterial silver nanoparticles (AgNPs). Hence, the interaction of natural antimicrobial compounds and antibacterial nanoparticles can be used as a potential tool for combating infectious diseases. In this study, a green, simple and effective approach is used to synthesize antibacterial AgNPs using fungal exopolysaccharide as both a reducing and stabilizing agent. The Ag-NPs were characterized by spectroscopic analysis, scanning electron microscopy (SEM), Energy Dispersive X-ray spectroscopy (EDX) and Dynamic light scattering (DLS). Furthermore, the synergistic effect of bacteriocin-AgNPs was determined against pathogenic strains. The histogram of AgNPs indicated well-dispersed, stabilized and negatively charged particles with variable size distribution.


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