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BIOSYNTHESIS OF SILVER NANOPARTICLES USING *LACTOBACILLUS FERMENTUM*, AND CHARACTERIZATION AND *IN-VITRO* ANTIBACTERIAL EFFECT AGAINST *SALMONELLA TYPHI*

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The biological synthesis of silver nanoparticles (AgNPs) is a novel and alternative approach to antibiotics. This study was designed to biosynthesize and characterize AgNPs and evaluate the *in-vitro* toxicity of AgNPs against *Salmonella typhi* (ATCC14028). Cell-free supernatant of 16s-rRNA sequenced *Lactobacillus fermentum* (L_{12}) was provided as the reducing and stabilizing agent during the synthesis of AgNPs when supplied with Ag^{+}. Formation of AgNPs was indicated by the absorption peak at 410 nm in the UV-Vis spectrum. Transmission and Scanning Electron Microscopy revealed the size of AgNPs in the range of 5-20 nm. Further, AgNPs exhibited a peak at 3.0 keV in Energy Dispersive X-ray analysis. *In-vitro* antibacterial activity was evaluated by the agar well-diffusion method (in triplicates) using Muller-Hinton Agar, and the average diameter of inhibition of 15.3 mm was obtained. The characterization of nanoparticles revealed the synthesis of stable AgNPs. The application of these AgNPs as an effective *in-vitro* antibacterial agent against ATCC14028 was verified.

Keywords: Antibacterial activity, *Lactobacillus fermentum*, Nanoparticles, *Salmonella typhi*