Fabrication of monodispersed AgNPs using Lespedeza cyrtobotrya and its antibacterial activity

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Synthesis of particles with antibacterial properties is of great interest in the development of new pharmaceutical products. In this study we present the synthesis of silver nanoparticles (AgNPs) prepared using biological reduction of aqueous silver nitrate, using methanol extract of Lespedeza cyrtobotrya as a reducing and stabilizing agent. The results of the characterization of the AgNPs showed monodispersed nanoparticles of narrow size distribution. Transmission electron microscopy showed that the radii of the individual particles ranged between 10 to 20 nm. X-ray diffraction revealed the formation of crystalline silver. Finally, the antibacterial activity was measured by the Kirby-Bauer method. The half maximal effective concentration against Escherichia coli, Klebsiella pneumoniae was found to be 4.1 ppm and 12.3 ppm respectively. Therefore, biogenic AgNPs could be cost-effective and performance-effective antibacterial agent.