

Abstract

In this study, the aqueous extract of *Rosa canina* fruit was used for biosynthesis of silver nanoparticles (AgNPs). The experimental factors affected on the biosynthesis, such as extract concentration, concentration ratio of the reactants and reaction time were investigated using Ultraviolet-Visible (UV-Vis) analyses. The UV-Vis spectrum of AgNPs colloid showed a plasmon band at 432 nm in the optimized conditions (10% extract concentration, 1:1.5 concentration ratio of the reactants and 24 h reaction time) which confirmed the reduction of silver ions to AgNPs in the aqueous media. The formation of AgNPs were also confirmed using X-ray diffraction (XRD), Field emission scanning electron microscopy (FESEM) and Fourier transform infrared spectroscopy (FTIR). According to the XRD analysis, the particle size of the prepared AgNPs was found to be in the range of 7 to 10 nm. The FESEM images showed a uniform distribution of the AgNPs with spherical shapes. The FTIR spectrum revealed the presence of various functional groups such as hydroxyl, amine and carbonyl groups. Finally, the antibacterial properties of AgNPs were evaluated against two bacteria, *Staphylococcus aureus* (*Staph. aureus*) and *Escherichia coli* (*E. coli*). The results showed that the antibacterial activity of AgNPs is different for each microorganism.

Keywords: Biosynthesis, silver nanoparticles, *Rosa canina*, antibacterial property, *Staphylococcus aureus*, *Escherichia coli*



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**Synthesis of silver nanoparticles using *Rosa Canina*
fruit and study of their antibacterial activity in
combination with some antibiotics Properties**

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