

Abstract

Biosynthesis of silver nanoparticles (AgNPs) using plants is an environmentally friendly and cost effective than chemical methods. The aim of this study was synthesis of AgNPs using aqueous extracts of *Prosopis farcta* fruits and its anti-oxidant and anti-bacterial activity. The effects of different parameters different concentrations of the extract, the effects of time and temperature on biosynthesis of AgNPs was evaluated. The morphology and biosynthesis of AgNPs was identified and confirmed by spectroscopy uv - visible, X-ray diffraction (XRD) and transmission electron microscopy (TEM). The results showed that the optimum wavelength of 130 μ L/ml concentrations *P. farcta* fruits with a mixing ratio of 130: 9 (extract- silver nitrate), which greater amount of silver ions were reduced. AgNPs were obtained formed spherical particles with an average size of 12.68 nm. Then, phenol and flavonoid content and antioxidant activity by reduction (FRAP) and diphenyl Pykryl hydrazine (DPPH) methods were investigated. The antimicrobial properties of the nanoparticles were studied with the disc diffusion method. The results showed that total phenolic and flavonoids were higher in AgNPs-containing plant extract compared to the fruit extract. Biosynthesized AgNPs showed a higher antioxidant activity by both methods compared to *P. farcta* fruit extract alone. The antimicrobial activity of AgNPs showed higher activity in AgNPs-containing plant extract compared to the fruit extract more against gram-positive to gram-negative bacteria.

Key words: *Prosopis farcta*, Silver nanoparticles, Antioxidant activity, Antibacterial activity



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Title

Green synthesis of silver nanoparticles using *Prosopis farcta* fruit extract and evaluation of its antioxidant properties

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