Arta (Calligonum Comosum, L'her.) Shoot Extract: Bio-mediator in Silver Nanoparticles Formation and Antimycotic Potential

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Abstract : Environmentally friendly green synthesis of nanomaterial has a very significant part in nanotechnology. In the present research, the synthesis of silver nanoparticles (AgNPs) was established by treating silver ions with the aqueous extract of Calligonum comosum green shoots at room temperature. AgNPs formation was firstly detected by the colour change of mixed extract (plant extract and AgNO3). Further characterization was done by ultraviolet (UV)-Vis spectrophotometer, transmission electron microscopy (TEM), scanning electron microscopy (SEM), zeta potential and fourier transform infrared spectroscopy (FTIR). The peak values for UV-VIS- spectroscopy were in the range of 440 nm, TEM micrograph showed a spherical shape for the particles and zeta potential showed the formation of negative charged nanoparticles with an average size of about 105.8 nm. 1635.41 and 3249.83 cm-1 are the peaks detected from the FTIR analysis. In this study, biosynthesized silver nanoparticles mediated by C. comosum were tested for their antimycotic activity using a well diffusion method against fungal species; Aspergillus flavus, Penicillium sp, Fusarium oxysporum. Our findings indicated that biosynthesized AgNPs showed an efficient antimycotic activity against tested species. The antimycotic action of AgNPs varied according to different fungal species. Results confirmed the ability of C. comosum green shoot extract to act as an reducing and stabilizing agent during the synthesis of AgNPs.

Keywords : AGNPS, zeta potential, TEM, SEM

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