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Green Synthesis of Silver Nanoparticles Using Echinacea Flower Extract and Characterization

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Abstract : Green synthesis of silver nanoparticles (AgNPs) was carried out by using echinacea flower extract as reducing/protecting agent. The effects of various operating parameters and additives on the dimensions such as stirring rate, temperature, pH of the solution, the amount of extract and concentration of silver nitrate were optimized in order to achieve monodispersed spherical and small size echinacea protected silver nanoparticles (echinacea-AgNPs) through biosynthetic method. The surface roughness and topography of synthesized metal nanoparticles were confirmed by using Atomic Force Microscopy (AFM). High-Resolution Transmission Electron Microscopic (HRTEM) results elaborated the formation of uniformly distributed Echinacea protected AgNPs (Echinacea-AgNPs) having an average size of 30.2±2nm.

Keywords : Echinacea flower extract, green synthesis, silver nanoparticles, morphology
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