

Green Synthesis and Characterization of Silver Nanoparticles using Ehretia Laevis Leaf Extract

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Abstract: *The present study reports the eco-friendly, rapid and cost effective synthesis of silver nanoparticles (AgNPs) using aqueous leaf extract of Ehretia laevis. The phytochemicals present in the extract acts as reducing and stabilizing agents, facilitating the conversion of Ag⁺ ions into stable AgNPs. The synthesis was confirmed by the appearance of a brown color and a characteristic surface plasmon resonance (SPR) peak in the UV-Visible spectrum around 420 nm. The biosynthesized silver nanoparticles (AgNPs) were subjected to detailed characterization using Fourier-transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), Scanning electron microscopy (SEM) and dynamic light scattering (DLS). The nanoparticles were predominantly spherical with an average size of 15-40nm, crystalline in nature and capped with functional groups derived from plant metabolites. This study demonstrate that Ehretia laevis extract serve as a potential bioreductant for sustainable nanoparticle production with potential applications in antimicrobial and wound healing formulations.*

Keywords: Green synthesis, Ehretia laevis, Silver nanoparticles, UV-Vis, FTIR, XRD, SEM

