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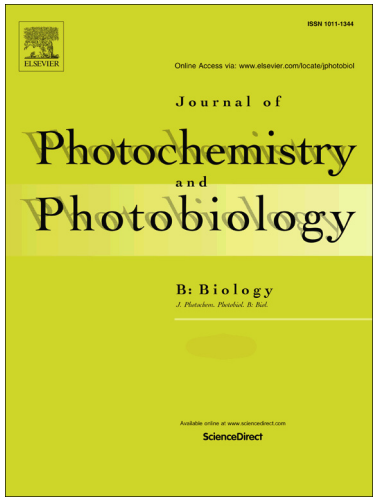

Lantana camara leaf extract mediated silver nanoparticles: Antibacterial, Green catalyst

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Lantana camara leaf extract mediated silver nanoparticles: Antibacterial, Green catalyst

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ABSTRACT

Silver nanoparticles (AgNPs) have been synthesized by *Lantana camara* leaf extract through simple green route and evaluated their antibacterial and catalytic activities. The leaf extract (LE) itself acts as both reducing and stabilizing agent at once for desired nanoparticle synthesis. The colorless reaction mixture turns to yellowish brown attesting the AgNPs formation and displayed UV-Vis absorption spectra. Structural analysis confirms the crystalline nature and formation of fcc structured metallic silver with majority (111) facets. Morphological studies elicit the formation of almost spherical shaped nanoparticles and as $AgNO_3$ concentration is increased, there is an increment in the particle size. The FTIR analysis evidences the presence of various functional groups of biomolecules of LE is responsible for stabilization of AgNPs. Zeta potential measurement attests the higher stability of synthesized AgNPs. The synthesized AgNPs exhibited good antibacterial activity when tested against *Escherichia coli, Pseudomonas spp.*, *Bacillus spp.* and *Staphylococcus spp.* using standard Kirby-Bauer disc diffusion assay. Furthermore, they showed good catalytic activity on the reduction of methylene blue by *L. camara* extract which is monitored and confirmed by the UV-Vis spectrophotometer.

Keywords: Leaf extract, Green synthesis, AgNPs, Antibacterial activity, Green catalyst

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