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Green Synthesis of Silver Nano Particles From Carica Papaya Plant Leaf Extract and their Antimicrobial Activity

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Abstract: *Green synthetic methodology is now days emerged as most profound strategy in synthetic chemistry as it is environment friendly. Nano technology is not exception to that as it involves synthesis of various Nano-materials by using biological extract and their applications in various fields. Among the several metal nanoparticles, due to their distinct properties like chemical stability, favorable electronic conductivity and catalytic activity, Silver nanoparticles have attracted special attention. The present work explores the simple and green method for the synthesis of silver nanoparticles (Ag-NPs). To become free from toxic chemical components, Synthesis involves use of leaf extract of Carica papaya, prepared in water as green solvent and the physicochemical properties of prepared nanoparticles were studied using several characterization techniques involving UV-Visible, and FTIR Spectroscopy. The highest peak of absorption at 428 nm in Uv-Visible spectra clearly supports the formation of Ag-NPs. The FT-IR analysis shows different peakswhich clearly indicates presence of the polyphenolic and alcoholic functional groups in carica papaya leaf extract which acts as capping and stabilizing agents on the surface of synthesized Ag-NPs. Face-centered-cubic (FCC) structure of crystalline silver nanoparticles was determined from XRD analysis. In addition to that the antimicrobial activity was evaluated against pathogenic bacteria Staphylococcus aureus and Escherichia coli. The results revealed that synthesized nanoparticles exhibits prominent biological activity. The present study provides cost effective, better green approach having capability of supporting large scale synthesis of silver nanoparticles, free from toxic chemicals which can be used for medicinal purpose as antimicrobial agents.*

Keywords*:* Nanoparticles, Caricapapaya plant, Leafextract, Reducing agent, Biological activity