

## Beijerinckia indica Extracellular Extract Mediated Green Synthesis of Silver Nanoparticles with Antioxidant and Antibacterial Activities against Clinical Pathogens

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**Abstract :** This work investigated the use of *Beijerinckia indica* extracellular extract for the synthesis of silver nanoparticles using  $\text{AgNO}_3$ . The formation of nanoparticles was confirmed by different methods, such as UV-Vis absorption spectroscopy, XRD, FTIR, EDX, and TEM analysis. The formation of silver nanoparticles (AgNPs) was confirmed by the change in color from light yellow to dark brown. The absorbance peak obtained at 430 nm confirmed the presence of silver nanoparticles. The XRD analysis showed the cubic crystalline phase of the synthesized nanoparticles. FTIR revealed the presence of groups that acts as stabilizing and reducing agents for silver nanoparticles formation. The synthesized silver nanoparticles were generally found to be spherical in shape with size ranging from 5 to 20 nm, as evident by TEM analysis. These nanoparticles were found to inhibit pathogenic bacterial strains. This work proved that the bacterial extract is a potential eco-friendly candidate for the synthesis of silver nanoparticles with promising antibacterial and antioxidant properties.

**Keywords :** antioxidant activity, antimicrobial activity, *Beijerinckia indica*, characterisation, extracellular extracts, silver nanoparticles

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