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Synthesis and Characterization of Silver Nanoparticles by Chemical Reduction Method and their Antimicrobial Activities

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Abstract : Silver nanoparticles can be synthesized using a simple solvent free, economic and eco-friendly chemical reduction method. The production of silver nanoparticles from silver nitrate and subsequently reducing with glycerol. The structural characterization of synthesized nano particles was carried out using XRD and SEM. The optical characterization was carried out using UV and FTIR. The XRD result shows that the nano particles are of spherical shape and the average crystal size of the silver nano particle is in the range of 5nm and 10nm. The SEM analysis shows that the shape of the nano particles is nano spherical. The quality and purity of the silver nano particles are confirmed using XRD spectral analysis.The nanoparticles of silver showed high antimicrobial activity against gram positive bacteria such as Escherichia coli, Staphylococcus aureus, and Pseudomonas aeruginosa which is a highly methicillin resistant strain.

Keywords: Silver nanoparticles, XRD analysis, Optical properties, Antimicrobial activity.

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