

Green Synthesis and Characterisation of Gold Nanoparticles from the Stem Bark and Leaves of *Khaya Senegalensis* and Its Cytotoxicity on MCF7 Cell Lines

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Abstract : The process for the development of reliable and eco-friendly metallic Nanoparticles is an important step in the field of Nanotechnology for biomedical application. To achieve this, use of natural sources like biological systems becomes essential. In the present work, extracellular biosynthesis of gold Nanoparticles using aqueous leave and stem bark extracts of *K. senegalensis* has been attempted. The gold Nanoparticles produced were characterized using High Resolution scanning electron microscopy, Ultra Violet-Visible spectroscopy, zeta-sizer Nano, Energy-Dispersive X-ray (EDAX) Spectroscopy and Fourier Transmission Infrared (FTIR) Spectroscopy. The cytotoxicity of the synthesized gold nanoparticles on MCF-7 cell line was evaluated using MTT assay. The result showed a rapid development of Nano size and shaped particles within 5 minutes of reaction with Surface Plasmon Resonance at 520 and 525nm respectively. An average particle size of 20-90nm was confirmed. The amount of the extracts determines the core size of the AuNPs. The core size of the AuNPs decreases as the amount of extract increases and it causes the shift of Surface Plasmon Resonance band. The FTIR confirms the presence of biomolecules serving as reducing and capping agents on the synthesised gold nanoparticles. The MTT assay shows a significant effect of gold nanoparticles which is concentration dependent. This environment-friendly method of biological gold Nanoparticle synthesis has the potential and can be directly applied in cancer therapy.

Keywords : biosynthesis, gold nanoparticles, characterization, *calotropis procera*, cytotoxicity

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