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Selective Toxicity of Biosynthesised Silver Nanoparticles on MCF-7 and MDA MB-231 Breast Cancer Cell Lines

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Abstract : Biosynthesized nanoparticles have many applications in the field of biopharmaceutics due to its high surface to volume ratio, less toxicity and synergistic effects with conjugated biomolecules. This study reports the selective cytotoxicity effect of biosynthesized silver nanoparticles (AgNPs) on breast cancer cell lines MCF-7 and MDA MB-231. AgNPs were synthesized using an aqueous extract of *Mollugo cerviana* species of plant and characterized using UV-visible spectroscopy, zeta potential analyser, SEM, FT-IR, XRD, and EDX. An UV-visible spectrum of the extract shows the surface plasmon resonance peak of AgNPs at 420 nm. SEM analysis results confirm the sphericity of the AgNPs whose size is in the range of 50 – 100 nm. The zeta potential value of -27 mV indicates the stability of the biosynthesized AgNPs. Dose-Dependent cytotoxicity was observed against human breast cancer cells lines MCF-7 and MDA MB-231. The inhibitory concentrations (IC₅₀) are 21.53 µg/mL and 25.52 µg/mL respectively. There was no significant toxicity against Vero cells below 100 µg/mL concentration of AgNPs. The data obtained in the study reveal the potential therapeutic value of biogenic silver nanoparticles in cancer treatment and further studies are required to elucidate the mechanism of selective activity of biosynthesized AgNPs on cancer cells.

Key words: Silver nanoparticles, *Mollugo cerviana*, cytotoxic effect, Inhibitory concentration, Breast cancer cells.

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