

SILVER NANOPARTICLES: SYNTHESIS, CHARACTERIZATION AND ITS ANTIFILARIAL ACTIVITY

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The present work deals with the synthesis of silver nanoparticles sonochemically using trisodium citrate (acting both as capping agent as well as reducing agent) and sodium borohydride (acting as reducing agent only). Synthesized silver nanoparticles (AgNP) were characterised by UV-Vis spectroscopy, TEM (Transmission electron microscope) and SAED (Selective area electron diffraction) images. The antifilarial efficacy as well as mechanism of action were studied on filarial nematode Setaria cervi. Antifilarial activity of these AgNPs were assessed by various techniques such as Relative Movability (RM), MTT assay, Dye Exclusion test, Propidium iodide (PI) staining and DNA Fragmentation assay. RM assessment confirms that all the nanoparticles show time-dependent antifilarial effect. Using MTT assay, the effects of silver nanoparticles on viability of Microfilariae were studied. Parasite viability was checked by Trypan Blue Dye Exclusion test, which dyes the dead oocytes selectively whereas live oocytes remained colourless. AgNP-treated oocytes were stained blue. Using PI staining, fragmented nuclear morphology resulted in AgNP treated oocytes, but no such fragmentation was observed in control oocytes (i.e. oocytes which are not treated by AgNP). Hence it can be concluded that AgNPs possess strong macro- and micro-filarial activity against S. cervi.
