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Metal Nanoparticles Caused Death of Metastatic MDA-MB-231 Cells

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Abstract : The present study determined the toxic potential of metal nanoparticles in cell culture system. Silver and gold nanoparticles were synthesized and characterized following established "green" protocols. The synthesized nanoparticles, in varying concentrations ranging from 0.1–100 µM were evaluated for toxicity in metastatic MDA-MB-231 cells. The nanoparticles promoted a generation of reactive oxygen species and reduced cell viability to less than 50% in the demonstration of cellular toxicity. The nanoparticles; gold and the silver-gold mixture had IC50 values of 56.65 and 18.44 µM respectively. The IC50 concentration for silver nanoparticles could not be determined. Furthermore, the probe of the cell death using flow cytometry and confocal microscopy revealed the partial involvement of apoptosis as well as necrosis. Our results revealed cellular toxicity caused by the nanoparticles but the mechanism remains yet undefined.

Keywords : cell death, nanomedicine, nanotoxicology, toxicity
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