**Abstract**

Nests of the paper wasp, *Ropalidia marginata* and mud nest wasp, *Sceliphron caementarium* were used for the biological synthesis of silver nanoparticles (AgNPs). The objective of the present work was towards the evaluation of in-vitro cytotoxic activity of silver nanoparticles synthesized from the nest extracts of the paper wasp (PE), and mud wasp, (ME) against breast cancer cell lines (MCF 7) and cervical cancer cell lines (HeLa). Characterization of the AgNPs were done by UV-Visible spectrometry, Scanning electron microscopy (SEM), Energy dispersive X-ray analysis (EDAX), X-ray diffraction (XRD) and Fourier Transform Infrared spectroscopy (FTIR). The UV spectrophotometeric analysis of AgNPs displayed maximum absorption at 389 nm for PE and 400 nm for ME. Prominent peaks were obtained with FTIR data indicating the presence of phenolics compounds and proteins. SEM studies revealed the spherical nature of the nanoparticles with the size ranging from 0.1 to 0.5 μm (PE) and 0.2 to 0.5 μm (ME). The weight percentage of Ag present in PE was 75.48 % and 72.57 % for ME indicating the purity of sample during EDAX analysis. MTT assay results revealed that AgNPs exhibited potent cytotoxicity against MCF 7 cell lines with IC50 value for18.98μg/ml with regard to paper wasp extract (PE) and 22.70μg/ml for mud nest wasp (ME).And for the HeLa cell lines the values were 23.10μg/ml for PE and 29.02μg/ml for ME. Thus the present study concludes that the bio synthesized AgNps exhibit anticancer properties and these nest extracts can be used to develop into an anticancer formulation of clinical interest