

عنوان مقاله:

Microwave assisted biosynthesis of silver nanoparticles using banana leaves extract: Phytochemical, spectral characterization, and anticancer activity studies

محل انتشار:

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خلاصه مقاله:

Microwave assisted biosynthesis of nanoparticles has been a cost effective, environmentally benign, and alternative to the chemical method. In this context, we report eco-friendly and robust nanoparticles synthesized using the bio-waste (Banana leaves) extract material through a microwave method. The newly synthesized Banana Leaves extract -Silver Nanoparticles (BL-AgNPs) is confirmed by using the UV-Visible, FT-IR spectroscopy and Scanning Electron Microscopy (SEM) techniques. UV-Vis spectrum shows the widening of the band around ۴۷۶ nm, which confirms the polydispersed nature of BL-AgNPs. FT-IR spectroscopy explores that, hydroxyl and carbonyl groups in the Banana Leaves extract play vital role in the reduction of silver ions and also attach with AgNPs. The phytochemical studies reveal that, the polyphenols and alkaloids present in the BL extract act as reducing and stabilizing agent, which is responsible for the reduction of Ag⁺ (silver ions) to Ag (BL-AgNPs) and stabilization of BL-AgNPs. This clearly confirms the formation of silver nanoparticles (AgNPs). SEM results revealed that, bead shape of BL-AgNPs with particle size of ۸۰ to ۱۰۰ nm. In conclusion, BL-AgNPs exhibits promising anticancer activity against lung cancer and breast cancer cell line by endorsing inhibition of cell migration and proliferation on low concentration.

کلمات کلیدی:

Biosynthesis, UV-Visible spectroscopy, nanoparticles, Anticancer activity, Phytochemical screening

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