

Urtica dioica L leaf aqueous extract green-synthesized silver nanoparticles: Characterization and cytotoxicity, antioxidant, and anti-human lung carcinoma effects

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Abstract

In this study, Urtica dioica L extract as a stabilizing and reducing agent was utilized to synthesize silver nanoparticles in the aqueous medium. Various techniques containing UV-Vis. spectroscopy, FT-IR spectroscopy, X-ray diffraction (XRD), scanning electron microscopy (SEM), and Transmission electron microscopy (TEM) were used to characterize the synthesized nanoparticles (AgNPs). On the other hand, the MTT assay was run to evaluate anti lung cancer activity of AgNPs. The uniform spherical morphology ranging from 26.22 to 65.18 nm was detected in the SEM images for the biosynthesized nanoparticles. The crystal size of AgNPs, according to the XRD analysis, was 48.11 nm. In the cellular and molecular part of the recent study, the treated cells with AgNPs@Urtica dioica L were assessed by MTT assay for 48 h about the cytotoxicity and anti-human lung adenocarcinoma properties on normal (HUVEC) and lung adenocarcinoma cell lines i.e. HLC-1, LC-2/ad, and PC-14. The viability of malignant lung cell line reduced dose-dependently in the presence of AgNPs@Urtica dioica L. The IC₅₀ of AgNPs@Urtica dioica L were 201, 108 and 143 µg/mL against HLC-1, LC-2/ad, and PC-14 cell lines, respectively. In the antioxidant test, the IC₅₀ of AgNPs@Urtica dioica L and BHT against DPPH free radicals were 125 and 60 µg/mL, respectively.

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