

Scrophularia striata leaf aqueous extract green-synthesized silver nanoparticles: Characterization and cytotoxicity, antioxidant and anti-nerve cancer effects

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November 24, 2022

Abstract

In the present study, we tried to prepare and formulate a chemotherapeutic drug (Silver nanoparticles in aqueous medium using Scrophularia striata leaf extract) for the treatment of nerve cancer. The chemical characterization tests including UV-Visible Spectroscopy (UV-Vis), Fourier Transformed Infrared Spectroscopy (FT-IR), and Field Emission Scanning Electron Microscopy (FE-SEM) were used for the characterization of silver nanoparticles. To survey the cytotoxicity and anti-nerve cancer effects of AgNO₃, S. striata aqueous extract, and AgNPs, MTT assay was used on the nerve (Human peripheral nerve sheath tumor (S462 and BL1391)) cancer cell lines. For investigating the antioxidant properties of AgNO₃, S. striata aqueous extract, and AgNPs, the DPPH test was used in the presence of butylated hydroxytoluene as the positive control. In the FE-SEM images, the silver nanoparticles were in an average size of 36.19 nm with the spherical shape. The results of MTT assay confirmed removing the S462 and BL1391 cell lines after treating with low concentrations of AgNPs. AgNPs inhibited half of the DPPH molecules in the concentration of 97 µg/mL. As mentioned, AgNPs had significant anti-nerve cancer properties against the above cell lines.

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