

Green synthesis of selenium nanoparticles by European black nightshade fruit extract and cytotoxicity effect evaluation on cancer cell line

Green synthesis of selenium nanoparticles (SeNPs) was achieved by a simple biological procedure using the using fruit extract of European black nightshade (*Solanum nigrum*) and to test their characterized at different concentration and anti-cancer, anti-oxidant, anti-bacterial activities. These selenium nanoparticles were characterized by UV-Vis spectroscopy, scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD). The synthesized SeNPS result of UV-Spectroscopy and the strong broad peak located at 443nm. In SEM analysis, the synthesized SeNPS was clearly seen that in a spherical shape. The size of SeNPS range is 30nm. In FTIR spectrum confirms the presence of varied functional groups within the plant extract, which can possibly influence the reduction process and stabilization of nanoparticles. In XRD analysis, the average size of SeNPS particles is 29 nm and are crystalline in nature. The cytotoxicity of SeNPs was assayed against human A-375 skin cancer cell line. The antioxidant DPPH methods confirmed that the iron nanoparticles have more antioxidant activity. The SeNPs have inhibited the growth of all microorganism indicating good antibacterial properties. Our results showed that the synthesized SeNPs has anticancer activity through MTT assay and Fluorescence microscopic analysis of cell death in A-375 skin cancer cell line.

Keywords: Selenium nanoparticle, *Solanum nigrum* fruit, DPPH, Anticancer activity, A375 cells.

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