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Evaluation of Cytotoxic Effect of Selenium Nanoparticles (An-SeNP) Obtained by Green Synthesis Method with *Inula viscosa* L. Extract on Hep-G2 Liver Cancer Cells

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Abstract

According to the World Health Organization (WHO) data, cancer is one of the most common causes of death worldwide today. In this study, the cytotoxic effects of selenium nanoparticles (An-SeNP) obtained by green synthesis method on human liver cancer cell line (Hep-G2) were investigated. *Inula viscosa* L. (Andız grass) extract was used during the synthesis process and two different synthesis methods were applied. In both methods, 10 mM SeO_2 solution and andız extract were mixed at a ratio of 4:1 and kept in a magnetic heater at 65°C for 12 hours. In the first method, a red color change was observed in the mixture, 10 mL of the obtained An-SeNPs were used directly, and the remaining part was centrifuged to separate the nanoparticles. Centrifuged and uncentrifuged samples were used in cell cultures within 2 days. In the second method, the color in the mixture turned orange, then it was kept in the oven for 12 hours and stored in the dark at room temperature for 30 days. The An-SeNPs obtained in this method were used for cell studies without centrifugation. Synthesized nanoparticles were characterized by UV-vis spectrophotometer, Zeta potential and Scanning Electron Microscope (SEM). In order to evaluate cytotoxic effects, An-SeNPs at different concentrations were incubated with Hep-G2 cells for 24 hours and cell viability was determined by MTT test. It was determined that An-SeNPs showed significant cytotoxic effects on Hep-G2 cells in all three applications

Key words: *Green synthesis, selenium nanoparticles, Inula viscosa, Hep-G2, cytotoxicity, MTT*