

## عنوان مقاله:

Green synthesis of Ag-NPs as a metal nanoparticle and ZnO-NPs as a metal oxide nanoparticle: Evaluation of the in vitro cytotoxicity, anti-oxidant, anti-angiogenic activities

## محل انتشار:

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## خلاصه مقاله:

Objective(s): The study aimed to synthesize both silver- and zinc-oxide nanoparticles utilizing the Peganum harmala smoke extract (PHSE) bio-platform to evaluate their cytotoxicity on different types of human cancer cell lines and study their anti-oxidant, and anti-angiogenic potentials. Materials and Methods: The Silver (Ag) and zinc oxide (ZnO) nanoparticles (NP) were produced utilizing the green-synthesize method by applying the PHSE bio-platform. After characterization by X-Ray Diffraction (XRD), dynamic light scattering (DLS), Field emission scanning electron microscopy (FESEM), and Fourier-transform infrared spectroscopy (FTIR) methods. MTT assay was used for the evaluation toxicity of nanoparticles. ABTS, DPPH, FRAP, and ROS for anti-oxidant capacity, chicks' chorioallantoic membrane (CAM), and qPCR for anti-angiogenesis effects of nanoparticles were used. Results: Ag-NPs (82.42 nm) and ZnO-NPs (163.05 nm) inhibited prostate, ovarian, and liver malignant cells. Inhibition of ABTS<sup>•+</sup> and DPPH<sup>•+</sup> and increasing the rate of intracellular ROS exhibited the anti and pro-oxidant capacity of Ag and ZnO-NPs out and inside of malignant cells. Also, their anti-angiogenesis impact was verified by significant dose-dependent VEGF and VEGFR down-regulation and the decreased blood vessels in the CAM. Conclusion: The anti-oxidant, cytotoxicity and anti-angiogenesis effects of Ag and ZnO-NPs synthesized from Pecan smoke extract make it possible to use these nanoparticles in cancer chemotherapy.

## کلمات کلیدی:

Angiogenesis inhibitors, Anti-Oxidants, Metal Nanoparticles

## لینک ثابت مقاله در پایگاه سیویلیکا:

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