

عنوان مقاله:

The Expression of Antioxidant Genes and Cytotoxicity of Biosynthesized Cerium Oxide Nanoparticles Against Hepatic Carcinoma Cell Line

محل انتشار:

مجله بیوشیمی پزشکی، دوره 7، شماره 1 (سال: 1398)

تعداد صفحات اصل مقاله: 5

نویسندگان:

Ali Es-haghi

Fatemeh Javadi

Mohammad Ehsan Taghavizadeh Yazdi

Mohammad Sadegh Amiri

خلاصه مقاله:

Background: Drug resistance due to genetic variations renders many therapeutic methods such as surgery, radiotherapy, chemotherapy, and hormone therapy unsuccessful in eradicating cancerous cells. Nowadays, application of nanoparticles (NPs) has been promising in destroying cancerous cells without side effects on normal cells. Objectives: This study aimed to investigate the antioxidant and anticancer effects of biosynthesized cerium oxide nanoparticles (CeO_2 -NPs) on a hepatic carcinoma cell line. Methods: MTT assay was used to determine the cytotoxicity of CeO_2 -NPs in concentrations of 0, 15.6, 31.2, 62.5, 125, and 250 $\mu\text{g/mL}$ after 24, 48, and 72 hours of incubation. Moreover, the expression levels of catalase (CAT) and superoxide dismutase (SOD) (the antioxidant genes) were investigated at different concentrations of CeO_2 -NPs using real-time polymerase chain reaction (PCR). Results: Our results showed a significant toxicity of the synthesized NPs against the cancerous liver cells. The IC_{50} calculated for CeO_2 -NPs was 500 $\mu\text{g/mL}$ at 24 hours of incubation. In addition, the expression levels of CAT and SOD significantly ($P < 0.05$) increased upon the treatment of cells with CeO_2 -NPs (500 $\mu\text{g/mL}$) compared to the untreated cells. Conclusion: Considering the minimal effects of the biosynthesized CeO_2 -NPs on normal cells and on the other hand their considerable toxicity against hepatic cancer cells, these NPs could be utilized in medicine and in the development of new drugs for cancer cells.

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1909006>

