

عنوان مقاله:

The Cytotoxicity of Tellurium Nanoparticles on Different Cell Lines and Their in vivo Anticancer Effects in an Animal Model

محل انتشار:

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خلاصه مقاله:

Background: Tellurium- containing compounds are suggested as the treatment agents for different diseases. This study aimed to synthesize tellurium nanoparticles (TeNPs) and study their in vitro and in vivo effects on tumour cells. **Method:** In this experimental study, the synthesis of TeNPs in an aqueous solution was achieved with lactose as a reducing agent. The cells (2×10^4) were seeded, in triplicate, in 96-well plates and exposed to different concentrations of TeNPs for 48 hours. The determination of cell viability was done by MTT assay. In vivo studies were performed using breast cancer-bearing mice treated with TeNPs at different doses via intraperitoneal (IP) and intravenous (IV) injections. **Results:** After 48 hours of treatment with TeNPs at different concentrations, cancer cell line viability was significantly decreased compared with control at almost all concentrations. Moreover, the IC_{50} of TeNPs in the non-cancerous cell line CHO ($50.53 \mu\text{g/mL}$) was far above that of EJ138 ($29.60 \mu\text{g/mL}$) and 4T1 ($7.41 \mu\text{g/mL}$) cell lines, revealing their lower toxicity in normal cells in comparison with cancer cells. The in vivo study's findings also showed that both delivery methods significantly inhibited tumor development, and that breast cancer-bearing mice lived longer than control mice, particularly when the largest dosage ($400 \mu\text{g}$, injected three times a week) was used. **Conclusion:** These results demonstrate TeNPs as promising therapeutic agents for cancer treatment. However, further

.investigation is still needed to determine the in vitro and in vivo anticancer mechanisms of TeNPs

کلمات کلیدی:

Anticancer, Cytotoxicity, Cell Line, Experimental mammary Neoplasm, Metal Nanoparticles

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