عنوان مقاله:

In vitro cytotoxicity of gold nanorods on viability of mouse acute lymphoblastic leukemia and Spermatogonial stem cells

محل انتشار:

سومین کنگره بین‌المللی تولیدمثل (سال: 1396)

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خلاصه مقاله:

Background: Testicular cancer has one of the highest cure rates of all cancers. The biomedical applications of nanoparticles (NPs) in biological imaging, drug delivery, photothermal therapy have been demonstrated. Gold nanorods (GNRs) as new biomedical tools are the focus of research due to their ease of synthesis, chemical stability, and unique optical properties. The purpose of this study was to evaluate in vitro cytotoxicity of GNRs on the viability of SSCs and mouse acute lymphoblastic leukemia (EL4).Methods: We isolated SSCs from the 3–6-day-old mice, following enzymatic digestions and purification steps. Also, we provided EL4 cells from Pasteur Institute. We used multiple doses of GNRs that consisted of 50, 75, 100, 125 and 140 μM of GNRs. To determine the toxicity, we performed MTT assay. To confirm the identity of the El4 and SSCs, flow cytometry was used. Differences between groups were assessed by One-way ANOVA using the SPSS version 16.0 software.Result: The results of flow cytometry show that SSCs and EL4 cells were respectively PLZF and H-2kb positive. The percentage cytotoxicity of SSCs and EL4 cells that were treated with 50, 75, 100, 125 and 140 μM of GNRs was respectively 40.6±1.1%, 44.8±1.3%, 51.2±2.1%, 70.6±1.9%, 85.6±2.07% for SSCs and also 45.8±1.4%, 60.6±1.5%, 86.4±2.07%, 91.8±1.9% and 95.4±1.5% for EL4 cells. We observed that cell death of GNRs increased with an increase in the quantity of GNRs.Conclusion: The results show that the optimal mean dose for highest cell death in EL4 cells and lowest in .SSCs is 100 μM of GNRs

کلمات کلیدی:

(Cytotoxicity, Mouse acute lymphoblastic leukemia (EL4), Spermatogonial stem cells (SSCs), Gold nanorods (GNRs