

عنوان مقاله:

Sonophotodynamic therapy mediated by liposomal zinc phthalocyanine in a colon carcinoma tumor model: Role of irradiating arrangement

محل انتشار:

مجله علوم پایه پزشکی ایران، دوره 20، شماره 10 (سال: 1396)

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خلاصه مقاله:

Objective(s): Low penetration depth of light is the main defect of photodynamic therapy (PDT), which could be improved by sonodynamic therapy (SDT). In this study, a combination of PDT and SDT known as sonophotodynamic therapy (SPDT) was investigated using two reverse arrangements in CT₂₆ tumor model. **Materials and Methods:** The liposomal zinc phthalocyanine was synthesized and characterized. It was then administered to CT₂₆ tumor models as a sensitizer. The animal models were subjected to PDT, SDT, and the combined treatment in different groups. The doubling time for the survival of tumors and animals was considered as a measure to evaluate treatments efficacy.

Results: In all treatment groups there was a significant decline in tumor volume ۱۵ days after treatment compared to the main control group, but the optimum response was observed in the group receiving a combined treatment with the priority of PDT. ۱۲۰ days after treatment, in the groups treated by PDT and SDT, the tumor shrank by ۲۰%, while in the group receiving SPDT with PDT priority, ۸۰% of tumors was recovered. No case of complete tumor progression was observed in SPDT group with SDT priority. This could be due to the pores created in cell membranes during ultrasound irradiation of the tumor, which removed the sensitizer molecules from the cells and reduced PDT efficacy in SPDT group with SDT priority. **Conclusion:** It seems that SPDT with PDT priority offers a more efficient alternative than each of PDT, SDT individually or SPDT with the reverse arrangement.

کلمات کلیدی:

Sonophotodynamic therapy, Photodynamic Therapy, Sonodynamic therapy, Liposomal Zinc, Phthalocyanine, Colon carcinoma

لینک ثابت مقاله در پایگاه سیویلیکا:

