

عنوان مقاله:

Nano-encapsulated curcumin-Fe₃O₄ inhibits proliferation and hTERT gene expression of A549 lung cancer cells

محل انتشار:

اولین کنگره بین المللی مهندسی بافت و پزشکی بازساختی ایران (سال: 1397)

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خلاصه مقاله:

Introduction Strong evidence of antitumor effects of curcumin such as activation of apoptosis, inhibition of angiogenesis and prevention of metastasis has been confirmed. For targeted delivery of curcumin, it was used curcumin absorbed on the surface of nanomagnetic particles concomitant with biocompatible copolymer as a suitable replacement for routine chemotherapy approaches. The drug loaded nanoparticles can be used as specific drug vehicle which is controllable through application of an external magnetic field and be able to release the drug specifically at the favorite site. Also, targeted delivery of curcumin can improve availability and decrease amount of drug dosage and its side effects. **Methods** Curcumin and Fe₃O₄ were encapsulated inside the PLGA-PEG co-polymer. Then, the curcumin loaded PLGA-PEG-Fe₃O₄ nanoparticles were characterized using SEM, FTIR and VSM. In the next step, the cytotoxic effect of curcumin -loaded PLGA-PEG-Fe₃O₄ was assessed using MTT assay. After that, gene expression levels of hTERT were measured through Real-time PCR. **Results** By encapsulation of curcumin-Fe₃O₄, cytotoxicity of the drug substantially increased for all concentrations. Moreover, nano-encapsulated curcumin showed time-dependent cytotoxic effect on A549 cell line during 24, 48, 72 hours in comparison to pure curcumin. In addition, expression level of the hTERT is reduced with increasing concentrations in both of pure and nano-encapsulated curcumin. In compared to pure form, nano-encapsulated curcumin caused further decline on expression levels of the gene. **Conclusion** Curcumin incorporating with Fe₃O₄ loaded into PLGA-PEG co-polymer, as an effective targeted carrier, can make a promising horizon in targeted lung cancer therapy.

کلمات کلیدی:

Curcumin, Fe₃O₄, PLGA-PEG, A549, hTERT

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