

عنوان مقاله:

Enhanced in vitro cytotoxicity and intracellular uptake of Genipin via loaded on Nano-Liposomes made from soy lecithin in MCF-Y cells

محل انتشار:

مجله علوم نانو، دوره 9، شماره 1 (سال: 1401)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

Objective(s): As an alternative to chemical drugs, natural compounds such as Genipin can reduce toxicity and side effects. In recent years, Genipin's antioxidant properties have been considered a potential cancer treatment. Therefore, the present study investigated anti-cancer activity of newly formulated nano-liposomal loaded Genipin, made from soy lecithin, against MCF-Y cancer cell line. Materials and Methods: After synthesis, the physicochemical properties of the liposomes were confirmed by Dynamic light scattering (DLS), Scanning Electron Microscopy (SEM), Fourier-transform infrared spectroscopy (FTIR), and UV-vis spectrophotometry. Results: Our results showed that the prepared nano-liposome had a diameter of ۱۶۶.۲ nm. Its Zeta potential was -۲۵.۴ mV which indicates the good electrostatic stability of nano-liposomes. Also, a slight size distribution (PDI ۰.۲۸۷۰) and a high encapsulation efficiency (EE% >۸۲% and DL>۲۸%) are other features of synthesized nano-liposomal loaded Genipin. The in vitro result profile

demonstrated that the drug-controlled release from Genipin loaded-liposomal is ۶۵% during ۷۰h. The in vitro cytotoxic activity of nano-liposomal loaded Genipin in comparison with free Genipin, was explored on MCF-۷ cell line using MTT colorimetric assay. Our results revealed that the IC₅₀% (cytotoxicity) of MCF-۷ cells treated with nano-liposomes loaded Genipin were higher than those treated with free Genipin (about ۲.۴ orders of magnitude). Additionally, cell uptake studies evidenced a higher uptake of negative nano-liposomal loaded Genipin. Conclusion: In a nutshell, newly formulated nano-liposomal is an ideal vehicle for negative targeting (anticancer effect) of drugs to tumor cells that may result in improved efficacy and reduced toxicity of encapsulated drug moiety.

کلمات کلیدی:

Liposomes, Soybean lecithin, Genipin, Anticancer activity, Intracellular uptake

لینک ثابت مقاله در پایگاه سیویلیکا:

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