

عنوان مقاله:

Encapsulation of irinotecan in polymeric nanoparticles: Characterization, release kinetic and cytotoxicity evaluation

محل انتشار:

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تعداد صفحات اصل مقاله: 10

نویسندگان:

Heydar Mohammady - *Novel Drug Delivery Systems Lab, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran*

Rassoul Dinarvand - *Novel Drug Delivery Systems Lab, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran*
Medical Nanotechnology Research Center, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran

Mehdi Esfandiyari Manesh - *Novel Drug Delivery Systems Lab, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran*
Medical Nanotechnology Research Center, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran

Pedram Ebrahimnejad - *Department of Pharmaceutics, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran*
Pharmaceutical Sciences Research Center, Mazandaran University of Medical Sciences, Sari, Iran

خلاصه مقاله:

Objective(s): Irinotecan is a potent anti-cancer drug from camptothecin group which inhibits topoisomerase I. Recently, biodegradable and biocompatible polymers such as poly lactide-co-glycolides (PLGA) have been considered for the preparation of nanoparticles (NPs). **Materials and Methods:** In this study, irinotecan loaded PLGA NPs were fabricated by an emulsification/solvent diffusion method to improve the efficacy of irinotecan. The effect of several parameters on the NPs' characteristics was assessed, including the amount of drug and polymer, the amount and volume of the poly vinyl alcohol as a surfactant, and also the internal-phase volume/composition. The irinotecan entrapment efficiency and the particle size distribution were optimized by changing these variables. The cytotoxicity of the particles was evaluated by cell viability assay. **Results:** NPs were spherical with a comparatively mono-dispersed size distribution and negative zeta potential. Selected formulation (S9) showed suitable size distribution about 120 nm with relative high drug entrapment. MTT assay showed a stronger cytotoxicity of S9 against HT-29 cancer cells than control NPs and irinotecan free drug. The release kinetic indicated Log-Probability model in S9. **Conclusion:** Our results demonstrated that the designed NPs show suitable characteristic and also great potential for further in vivo cancer evaluation.

کلمات کلیدی:

Cell culture, Formulation, Irinotecan, Nanotechnology

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