

عنوان مقاله:

Synthesis and assessment of PHEMA-st-PEG-DA nanohydrogels for controlled released of cisplatin

محل انتشار:

بیست و هفتمین کنفرانس شیمی آلی ایران (سال: 1398)

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خلاصه مقاله:

Nanohydrogels are novel and attractive carriers for various anti-cancer factors delivery. The objective of present study is development of a safe nanohydrogel for pH responsive delivery of cisplatin. Herein, poly (hydroxyl ethyl methacrylate) is utilized as the main structure, which is cross-linked with PEGDA and EDTA through reversible addition fragmentation chain transfer polymerization technique. After synthesis, the developed structure is characterized using different methods, including ¹HNMR, FT-IR, size exclusion chromatography, TEM and DLS. The results confirm successful synthesis of the nanohydrogel with acceptable yield and nano scale mean size of 196 nm. Cisplatin is conjugated with the EDTA of aforementioned structure through pH responsive esteric bond. The efficiency of the prepared nanohydrogel in loading and release of the anti-cancer drug, cisplatin, is tested. The developed nanohydrogel shows great potential in cisplatin loading, as well a faster release rate of cisplatin in acidic pH. The results of in vitro toxicity assessment on SW 480 as a colorectal cancer cell line reveal an improved cytotoxicity induction by the cisplatin loaded particles when compared with the free cisplatin molecules. The suitable size (<200 nm), great potential in loading and release of the cisplatin and cytotoxicity induction in cancer cells are the reliable features of nanohydrogel as an ideal anti-cancer vehicle.

کلمات کلیدی:

RAFT synthesis, Nanohydrogel, PHEMA, PEG-DA, Cisplatin, Drug delivery

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