عنوان مقاله:

Preparation, Cytotoxity survey and Antimicrobial activity of biodegradable Chitosan/Nanohydroxyapatite, hitosan/nano-hydroxyapatite/nano-Silicon and Chitosan/nanohydroxyapatite/ nano-Silver biocomposites via in-situ hybridization: potential materials as internal fixation of bone fracture

محل انتشار:

دومین کنفرانس بین المللی یافته های نوین پژوهشی در شیمی و مهندسی شیمی (سال: 1395)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

Biomimetic hydroxyapatite (Hap), Chitosan/Nanohydroxyapatite (CT/n-Hap), CT/n-Hap/n-Si and CT/n-HAp/n-Ag were successfully fabricated. The SEM results revealed surface of the soaked samples was covered with the apatite layer that confirmed by FTIR spectrum. Size distribution findings demonstrated particle size of the composites to be ranges of between 1 to 36.7nm, 3-72.5 and 1-22.6nm with majority of the particles had a size of approximately 23±0.14, 18±0.14 and 10±0.09nm, respectively. The XRD and FTIR data specified some changes took place in the tri-component samples after composite formation. The highest antibacterial potential was seen in CT/n-HAp/n-Ag using Escherichia Coli (E.coli) which was probably due to release of silver ions. The MTT assay displayed significant differences in viability of endometrial stem cell by the CT/n-HAp powder as compared to the extract on first day but not the third day. However, the results of LDH release indicated that highest and lowest damaging effects on plasma membrane of Endometrial-Derived Stromal Cells have been induced via n-HAp and CT/n-HAp/n-Ag respectively. The results of MTT demonstrated that CT/n-HAp induced more cytotoxic effect on mitochondria than others. This study indicated that beside of strong antibacterial potential of CT/n-HAp/n-Ag, this nanocomposite had lowest damaging effect on plasma membranes and mitochondria of Endometrial-Derived Stromal Cells.

کلمات کلیدی:

Bionano-composite, Nano silver, Anti-bacterial potential, Cytotoxicity, LDH release

لینک ثابت مقاله در پایگاه سیویلیکا: