عنوان مقاله:

SYNTHESS AND BO-MECHANO-MATERALESTIC ASSESSMENT OF]HTYTDR0XYAIPATTE-GELATINE NAN0C0MIPOSITE SCAFF0)LIDS FORBONETSSUE ENGINEERING

محل انتشار:

سومین کنفرانس بین المللی مواد فوق ریزدانه و نانوساختار (سال: 1390)

تعداد صفحات اصل مقاله: 9

نویسندگان:

EHSAN SADEGHIAN DEHIKORD - *Physico-mechanical Characterization of Biomaterial Laboratory, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran*

MEHRAN SOLATI-HASHJIN - *Nanobiomaterials Laboratory, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran*

SEYYEDAMIR HOOSHTARAHMEDI - *Physico-mechanical Characterization of Biomaterial Laboratory, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran*

FATEME FAYYAZBAKHSH - *Nanobiomaterials Laboratory, Department of Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran*

خلاصه مقاله:

Since hydroxyapatite, a biocompatible calcium-phosphate based bioceramic, it has been recognized as a good bone scaffold. In this study, due to enhance the toughness and biodegradability properties of this biomaterial, it has been composited with gelatin, a well-known biocompatible biopolymer. This composite integrated osteo-conductivity, osteo-integration, mechanical stability, as well as compensation the HApbrittlenss. This novel bone scaffold was synthesized by freeze-drying of HAp-GEL discs to multi-disc lamination. Initially, hydroxyapatite powder was synthesized via precipitation method using ammonium-hydrogen-phosphate and calcium-nitrate salts. Due to confirm the synthesis process XRD and FTIR analyses were utilized. Then HAp-GEL solution with specific ratio was cast layered. The suspensions were then freezed for 24h and then exposed to freeze drying condition for 24 hours. The resulted composite was contained porous layer. The layers were cut to 10 layers, and glued with gelatin paste. The multilayered cylinders were soaked in the glutaraldehyde solution to be cross-linked and achieve higher mechanical strength. SEM images of synthesized HAp powder match with estimated values from XRD patterns demonstrate that grains size were in 8-9 nanometers range. As expected, synthesized structure was in nano range. Due to mechanical2 Ehsan Sadeghian Dehkord et al.experiments, the novel bone scaffolds were shaped in cylinders with dimensions of 3 millimeter in diameter and 6 millimeter in height. The operation was conducted in the standard condition and showed viscoelastic behavior of these scaffolds is so similar to natural bone. As a major result this .novel biomaterial is a suitable candidate to be used as a bone tissue engineering scaffold

کلمات کلیدی:

hydroxyapatite, gelatin, Scaffold, manocomposite, biomaterial

لینک ثابت مقاله در پایگاه سیویلیکا: