

عنوان مقاله:

Investigation of donepezil hydrochloride drug effect on osteogenic differentiation of human mesenchymal stem cells on PLLA nanofibrous scaffold

محل انتشار:

اولین کنگره بین المللی مهندسی بافت و پزشکی بازساختی ایران (سال: 1397)

تعداد صفحات اصل مقاله: 1

نویسندگان:

Zahra Soraya - *Department of Molecular and Cellular Sciences, Pharmaceutical Sciences Branch, Islamic Azad University, Tehran, Iran*

Raheleh Halabian - *Applied Microbiology Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran*

Ali Salimi - *Nanobiotechnology Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran*

خلاصه مقاله:

Bone defect due to illness and trauma is a common clinical disease and also a serious problem in orthopedic treatment especially in unrepairable injuries. Regenerative medicine specialists attend on newest curative with highest usefulness method to prevail on this problem. In this study, nontoxic, ecofriendly and cost effective PLLA (poly L-lactic acid) nanofibrous scaffold synthesized by electrospinning technique. Then, PLLA exposed to oxygen plasma for induction of hydrophilicity. Donepezil hydrochloride is an acetyl choline esterase inhibitor that prescribe in patients who suffer from brain demance. Last studies showed low risk of hip fracture in donepezil hydrochloride users. To achieve the purpose of promoting cell proliferation and bone differentiation, human bone marrow derived mesenchymal stem cells (hMSCs) were seeded in four condition: 1-TCPS, 2- PLLA nanofiber, 3-donepezil hydrochloride and 4- PLLA- donepezil hydrochloride then, all of them were treated with osteogenic induction media. Osteogenic differentiation of hMSCs was evaluated using common bone related markers such as alkaline phosphatase (ALP) activity, Alizarin Red and von Kossa staining as well as calcium content assay. Our results showed higher ALP enzyme activity, bio mineralization, von Kossa staining with more intensity in differentiated cells on PLLA-donepezil hydrochloride. In conclusion, our result indicated that combination of 3D scaffold in presence of donepezil hydrochloride drug is able to provide suitable matrix to support osteogenic differentiation of stem cells and .bone tissue engineering applications

کلمات کلیدی:

Stem cell, Osteogenic differentiation, PLLA Nanofiber, Donepezil hydrochloride

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/905545>



