

عنوان مقاله:

Effects of Hydroxyapatite Nanorods Prepared Through *Elaeagnus Angustifolia* Extract on Modulating Immunomodulatory/Dentine-Pulp Regeneration Genes in DPSCs

محل انتشار:

نهمین کنفرانس بین المللی علوم و توسعه فناوری نانو (سال: 1401)

تعداد صفحات اصل مقاله: 13

نویسندگان:

Ehsaneh Azaryan - *Student Research Committee, Birjand University of Medical Sciences, Birjand, Iran*

Mohsen Naseri - *Cellular and Molecular Research Center, Department of Molecular Medicine, Birjand University of Medical Sciences, Birjand, Iran*

Sobhan Mortazavi Derazkola - *Medical Toxicology and Drug Abuse Research Center (MTDRC), Birjand University of Medical Sciences, Birjand, Iran*

Esmat Alemzadeh - *Infectious Diseases Research Center, Birjand University of Medical Sciences, Birjand, Iran*

Esmat Alemzadeh - *Department of Medical Biotechnology, Faculty of Medicine, Birjand University of Medical Sciences, Birjand, Iran*

Fariba Emadian Razavi - *Dental research center, Faculty of Dentistry, Birjand University of Medical Sciences, Birjand, Iran*

خلاصه مقاله:

The aim of this study was to evaluate the impacts of nano hydroxyapatite (nHA) prepared through *Elaeagnus Angustifolia* extract (EAE) to expression of immunomodulatory/dentin-pulp regeneration genes in DPSCs. To produce nHA and modified nHA via EAE (nHAEA), the sol-gel technique was used. The functional groups of nanoparticles, morphological, and optical features were determined using FTIR, XRD, SEM, and TEM. The cell viability was then determined using the MTT method in the presence of various EAE, nHA, and nHAEA concentrations. Target gene expression was quantified using a real-time PCR procedure after treating DPSCs with an optimally non-toxic dose of EAE and nanoparticles. The presence of the HA phase was reported with the XRD and FTIR results. According to the results of SEM and TEM, the rod-like NPs could be fabricated. nHAEA were found to be characterized with low crystallite size, reduced diameter, lengthier, needle-like, and less agglomerated particles compared with nHA. The real-time PCR results demonstrated that nHAEA remarkably increased the expression of human leukocyte antigen-G δ (HLA-G δ), vascular endothelial growth factor (VEGF), dentin sialophosphoprotein (DSPP), and interleukin ϵ (IL ϵ) genes compared to the nHA group. These findings suggest that nHAEA might have the potential application in the stemness capability of DPSCs for the treatment of inflamed/damaged pulp.

کلمات کلیدی:

Dental pulp stem cell, *Elaeagnus Angustifolia*, Hydroxyapatite, Tissue regeneration, Immunomodulation

