

عنوان مقاله:

Comparison of Osteogenic Potential of Phenytoin with Dexamethasone in Cultured Dental Pulp Stem Cells

محل انتشار:

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خلاصه مقاله:

Background: One of the adverse effects of phenytoin (diphenylhydantoin, DPH) is enlargement of facial features. Although there are some reports on anabolic action of phenytoin on bone cells, the osteogenic potential of DPH on mesenchymal stem cells has not been studied. The purpose of this study was to evaluate the osteogenic potential of DPH on dental pulp stem cells (DPSCs). Methods: Human DPSCs were isolated and characterized by flow cytometry; presence of CD29 and CD44 and absence of CD34 and CD45 were performed to confirm the mesenchymal stem cells. Isolated DPSCs were differentiated either in conventional osteogenic medium with Dexamethasone or medium containing different concentration of phenytoin (12.5, 25, 100, and 200 μ M). The osteogenic differentiation evaluated by performing western blot test for Runt-related transcription factor 2 (RUNX2), osteopontin and alkaline phosphatase (ALP) also alizarin red S staining to measure the mineralization of cells. Results: Our results showed morphological changes and mineralization of DPSCs by using DPH were comparable with dexamethasone. Moreover, western blot results of DPH group showed significant increase of ALP, RUNX2 and osteopontin (OSP) in comparison with control. Conclusions: The data of present study showed the osteogenic activity of phenytoin, considering as an alternative of dexamethasone for inducing osteogenic differentiation of dental pulp stem cells.

کلمات کلیدی:

Dental Pulp Stem Cells, Osteogenic Differentiation, Phenytoin

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