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Stem Cells in Future Dentistry: Possibility Or Utopia?

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ABSTRACT

Teeth are organs that perform functions ranging from chewing, support and protection of soft tissues to help in the articulation of words and also an important factor in facial aesthetics. The dental support tissues include dental alveolus, periodontal ligament, cementum and gingiva, which protect and fix the teeth in the alveolar bone. When the teeth or any of supporting tissues were damaged, current techniques used to recover them in dental practice still fail to qualitatively and quantitatively restore all the lost structures. In this scenario, studies suggested that stem cells may stimulate these cells to differentiate in periodontal structures and even the formation of a biodent. A field of science that promotes studies with stem cells is tissue engineering with the objective of studying the possibility of functional and physiological restoration of damaged or lost tissues based on Engineering, Biology and Clinical Sciences.The interest of bioengineering in making dental structures is precisely the advantage of being accessible and not fundamental to life. Regardless of the technique used, three elements are essential in tissue engineering: stem cells, an extracellular matrix for transport of nutrients, oxygen and metabolite residues, and growth factors for coordinating dental morphogenesis. The objective of this study was to perform a literature review on the importance of stem cells in the development of Dentistry. Eleven articles both in Portuguese and English were slected with the search terms included: Dentistry, cells and Tissue Engineering. The articles suggested that it may be possible to perform in the clinic treatments of tissue and dental regeneration, from osteointegration in the implantology to correction of external cranial defects, in the future dentistry. Based on the articles published, further studies using stem cells for the purpose of application in Dentistry will be necessary. The results have shown to be positive and it is very likely that stem cells can routinely be used for the treatment of patients in the dental practice of the future.

Keywords:
Bioengineering; Stem cells; Genetic engineering; Dentistry; Tissue Regeneration; Gene Therapy

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