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Basal expression of growth factor associated genes in periodontal ligament stem cells reveals multiple distinctive pathways.
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Abstract
AIM: To identify and compare the expression level of growth factor associated genes in human periodontal ligament (PDL) stem cells with dental pulp stem cells isolated from deciduous teeth as well as to access their suitability in regenerative dentistry.

METHODOLOGY: PDL and dental pulp stem cells were isolated from deciduous teeth. Human both cells lines were expanded in identical culture condition and their differentiation profile and cell surface antigen were compared. In addition, growth factor associated genes profiles were assessed by using PCR array.

RESULTS: Stem cells from deciduous dental pulp (SCD) and periodontal ligament cultures were capable of proliferating and mutually expressed the specific phenotype profile of human mesenchymal stem cells (MSCs). In osteogenic cultures, calcium nodules were observed by day 21 in PDL and dental pulp stem cells. In adipogenic cultures, both cell populations showed positive Oil Red O staining by day 21. Likewise, in chondrogenic cultures, both stem cells expressed the formation of proteoglycan. Interestingly, the expression of growth factor analysis revealed a higher propensity of PDL stem cells towards angiogenesis, osteogenesis and neurogenesis as compared to dental pulp stem cells.

CONCLUSIONS: The data suggests the PDL stem cell population can be utilized as potential sources for cell-based therapies in regenerative dentistry. This article is protected by copyright. All rights reserved.

KEYWORDS: Angiogenesis, Neurogenesis, Osteogenesis, regenerative dentistry

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