

EXPRESSION OF EXTRACELLULAR MATRIX PROTEINS AND MATRIX METALLOPROTEINASES IN IMMATURE HUMAN DENTAL PULP STEM CELLS

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Introduction Adult stem cells can be isolated from different tissues including the human dental pulp, a structure originated from the dental papillae. These cells are of importance in a series of studies, as the analysis of tumors histogenesis. The aim of this study was to infer the histogenesis of odontogenic myxoma, a benign odontogenic neoplasia by analyzing the extracellular matrix proteins (ECM) and matrix metalloproteinases (MMP) molecules expressed in human dental pulp stem cells.

Methods Three different immature dental pulp stem cell cultures (IDPSC) (DL-1, DL-2 and DL-4) were used. The proteins searched were those, which is routinely used to characterize the odontogenic myxoma: vimentin, type I collagen, fibronectin, tenascin and hyaluronic acid (HA) and the matrix metalloproteinases (MMP-1, MMP-2 and MMP-9). Immunofluorescence and enzymatic assays were used for analyzing the presence of the proteins in the cells and in the culture media conditioned by the cells, respectively.

Results All the lineages expressed vimentin; however none expressed HA. DL-1 lineage expressed all the other ECM proteins, and the expression of type I collagen was not observed in the DL-2 lineage. Fibronectin and tenascin were not observed in the DL-4 lineage. All the lineages expressed all the MMP. The release of MMP-2 from all cell lineages was significantly higher than those of all other MMP.

Conclusion Based on the conditions of this study its possible to conclude that the overall expression of MEC proteins and MMP in the human dental pulp stem cells were similar to those found in the odontogenic myxoma. The lack of hyaluronic acid protein expression in IDPSC, which is involved in migration and proliferation of odontogenic myxoma, need to be more investigated.