Neural differentiation of human dental follicle precursor cells

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Introduction:

Dental follicle precursor cells (DFPCs) are plastic adherent cells, which are capable of differentiation toward dental cells, like cementoblasts and periodontal ligament cells. These ectomesenchymal cells express neural stem cell markers Nestin and Notch-1 that specify DFPCs also as potential neural progenitor cells. We investigated the gene expression pattern of typical neural and glial cell markers in DFPCs and investigated their neural differentiation potential.

Results:

Investigated neural and glial cell markers were found to be expressed in undifferentiated DFPCs. After induction of neural cell differentiation DFPCs became either long drawn out shaped cells or formed neurosphere-like structures after cell detachment from the cell culture surface. Gene expression increased for neural cell markers tested.

Discussion and Conclusion:

Previous studies have suggested that DFPCs may also be able to differentiate into neural precursor cells. Here, we demonstrate that DFPCs express typical neural cell markers and differentiate toward neural like cells after treatment with SRM based cell culture media. This supports the earlier suggestions and shows that DFPCs indeed are capable of differentiation into neuroectodermal cells.