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Amniotic Membrane Enhance the Effect of Vascular Endothelial Growth Factor on the Angiogenic Marker Expression of Stem Cells from Human Exfoliated Deciduous Teeth (Article)

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Abstract

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Previously, it was reported that human amniotic membrane (AM) induced stem cells from human deciduous exfoliated teeth (SHED) endothelial-like-cell differentiation. This interesting effect of AM matrix on SHED demands further elucidation. Objective of this in vitro work was to study the effect of 24-h VEGF induced on SHED endothelial differentiation when seeded on acellular stromal side (SS) of AM matrix. Stemness of SHED was identified by flow cytometry. Cell attachment and morphological changes towards the matrix was observed by scanning electron microscopy. Protein expression of endothelial marker was examined by Western blot. The expression of stem cells and endothelial-specific gene markers of VEGF-induced SHED cultured on human AM was inspected via reverse transcriptase-polymerase chain reaction. Results showed SHED at both passages retain stemness property. Ang-1 protein was expressed in SHED. Cells treated with VEGF and cultured on AM transformed attached well to AM. VEGF-induced SHED expressed both stem cell and endothelial-specific markers throughout the treatments and timeline. Interestingly, prolonged VEGF treatment increased the expression of Cox-2 and VE-Cadherin genes in all treated groups when compared to SHED. It was concluded that the VEGF-induced SHED showed better expression of endothelial-specific markers when cultured on SS of AM, with prolonged VEGF treatment. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

SciVal Topic Prominence ⓘ

Topic: Regenerative Endodontic | Tooth Pulp | Dental Sac

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Author keywords

Angiogenic differentiation Human amniotic membrane SHED Tissue engineering VEGF

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EMTREE medical terms:

- amnion angiogenesis Article cell adhesion cell differentiation controlled study deciduous tooth endothelium cell human human cell in vitro study marker gene protein expression stem cell

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