

Ageing Gingiva: A New Hope for Autologous Stem Cell Therapy

Authors : Ankush M. Dewle, Suditi Bhattacharya, Prachi R. Abhang, Savita Datar, Ajay J. Jog, Rupesh K. Srivastava, Geetanjali Tomar

Abstract : Objectives: The aim of this study was to investigate the quality of mesenchymal stem cells (MSCs) obtained from ageing gingival tissues, in order to suggest their potential role in autologous stem cell therapy for old individuals. Methods: MSCs were isolated from gingival tissues of young (18-45 years) and old (above 45 years) donors by enzymatic digestion. MSCs were analysed for cfu-f, surface marker expression by flow-cytometry and multilineage differentiation potential. The angiogenic potential was compared in a chick embryo yolk sac membrane model. The aging and differentiation markers including SA- β -galactosidase and p21 respectively were analysed by staining and flow-cytometry analysis. Additionally, osteogenic markers such as glucocorticoid receptor (GR), vitamin D receptor (VDR) were measured by flow-cytometry and RT-qPCR was performed for quantification of osteogenic gene expression. Alizarin Red S and alkaline phosphatase (ALP) activity were also quantitated. Results: Gingival MSCs (GMSCs) from both the age groups were similar in their morphology and displayed cfu-f. They had similar expression of MSC surface markers and p21, comparable rate of proliferation and differentiated to all the four lineages. GMSCs from young donors had a higher adipogenic differentiation potential as compared to the old GMSCs. Moreover, these cells did not display a significant difference in ALP activity probably due to comparable expression of GR, VDR, and osteogenic genes. Conclusions: Ageing of GMSCs occurs at a much slower rate than stem cells from other sources. Thus we suggest GMSCs as an excellent candidate for autologous stem cell therapy in degenerative diseases of elderly individuals. Clinical Significance: GMSCs could help overcome the setbacks in clinical implementation of autologous stem cell therapy for regenerative medicine in all age group of patient.

Keywords : bone regeneration, cell therapy, senescence, stem cell

Conference Title : ICSCN 2018 : International Conference on Stem Cells in Neurology

Conference Location : Mumbai, India

Conference Dates : February 22-23, 2018