Characterization and gene expression profiling of Cardiomyocytes established from Wharton Jelly derived Mesenchymal stem cells.

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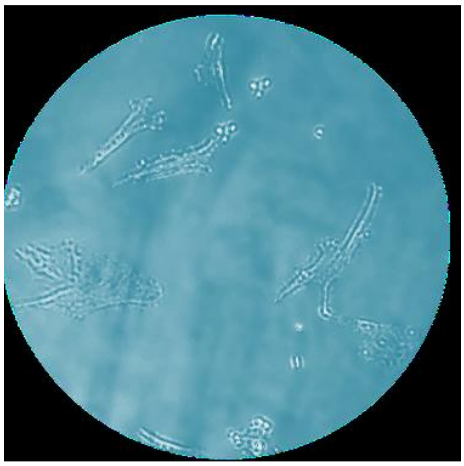
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Key words: Wharton's Jelly, Cardiomyocytes, Mesenchymal Stem Cells, Gene expression

I ABSTRACT

It is well established that immunomodulatory effects of Wharton's Jelly(WJ) derived Mesenchymal Stem Cells (MSCs) make them an attractive source of autologous and allogenic cell therapy approaches. In this respect, the present study aims at ascertaining the accessibility and regenerative ability of Wharton's jelly derived Mesenchymal stem cells. Experiments are thus conducted to investigate differentiation of the WJ-MSCs to Cardiomyocytes. MSC isolation from WJ is subsequently achieved by mechanical dissociation for generation of tissue explants, followed by enzymatic dissociation for generation of WJ cell pellets. Pellets from WJ samples are processed for isolating the mononuclear cells, The mononuclear cells are characterized with CD73+, CD105+, CD29+, CD44+, CD14-, HLADR-,CD90+, CD34-, CD45-, CD19- and Control .Flowcytometry revealed that those Wharton's Jelly Cells that are isolated, cultured and expanded were predominantly (98 to 99.9%) found to be MSCs. These cells differentiate to cardiomyocytes in the presence Cardiomyocyte differentiating medium and Oxytocin. Furthermore, Gene expression profiling serves to comprehend the various genes responsible for the differentiation and development of the MSCs to Cardiomyocytes. In that it is disclosed that development along each lineage is regulated by several signaling pathways that control cell division, growth and differentiation, including BMP/TGF-β, Notch, Wnt/β-catenin and MAPK pathways. Each of these pathways is regulated by a complex array of genetic, epigenetic (e.g., histone modification) and exogenous signaling factors that serve to guide cell fate and behavior during development and differentiation.

II IMAGE



WJMSCs FULLY DIFFERENTIATED INTO CARDIOMYOCYTES (INDUCED BY CM-DIFFERENTIATION MEDIUM) WITH SARCOMERIC STRIATIONS

III REEFERENCE

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IV BIOGRAPHY

Jaya Divya S., is a Research Scholar at the Post Graduate and Research Department of Zoology, Loyola College. Her Research interests include studies on Endothelial Progenitor cells, Mesenchymal stem cells and their therapeutics. Presently, she is pursuing investigations on stem cell from placental tissues and their genomic profiles.

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