عنوان مقاله:

PAX6 (+5a) Expression in Adipose Tissue-Derived Stem Cells Induces Retinal Ganglion Cells

محل انتشار:

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خلاصه مقاله:

Glaucoma remains one of the major causes of blindness in today's world. The progressive field of stem cell proposes an exciting potential for discovering novel therapies. Here, we report the development of an easy and high throughput method for differentiation of retinal ganglion cells (RGC) and bipolar cells from human adipose tissue-derived mesenchymal stem cells (hADSCs) using PAX6 (+5a) gene expression, a master gene in development of the vertebrate visual system. HADSCs was isolated from fat tissues and confirmed by their surface markers and differentiation potential into adipocytes and osteocytes lineages. Then, the coding region of human PAX6 (+5a) gene was cloned and lentiviral particles were produced. HADSCs differentiation was characterized by morphological characteristics, qRT-PCR and immunocytochemistry (ICC). The hADSCs were isolated successfully with high yield and purity (99%). After 30 hours post transduction by pLEX-pax6- pur lentiviral vectors in fibronectin supplemented medium, cells gradually showed the characteristic morphology of neuronal cells. QRT- PCR and ICC confirmed deriving of mainly RGC and marginally bipolar cells. The current investigation demonstrates the feasibility of differentiation of RGCs and bipolar cells from hADSCs using expression of PAX6 (+5a) in the medium supplemented by fibronectin

کلمات کلیدی:

human Pax6 gene; adipose tissue-derived mesenchymal stem cells; retinal ganglion cell