

Morphological and genetical changes of endothelial progenitor cells after in-vitro conversion into photoreceptors

ABSTRACT

Background

Retinal degeneration is a condition ensued by various ocular disorders such as artery occlusion, diabetic retinopathy, retrolental fibroplasia and retinitis pigmentosa which cause abnormal loss of photoreceptor cells and lead to eventual vision impairment. No efficient treatment has yet been found, however, the use of stem cell therapy such as bone marrow and embryonic stem cells has opened a new treatment modality for retinal degenerative diseases. The major goal of this study is to analyze the potential of endothelial progenitor cells derived from bone marrow to differentiate into retinal neural cells for regenerative medicine purposes.

Methods

In this study, endothelial progenitor cells were induced in-vitro with photoreceptor growth factor (taurine) for 21 days. Subsequently, the morphology and gene expression of CRX and RHO of the photoreceptors-induced EPCs were examined through immunostaining assay.

Findings

The results indicated that the induced endothelial progenitor cells demonstrated positive gene expression of CRX and RHO. Our findings suggested that EPC cells may have a high advantage in cell replacement therapy for treating eye disease, in addition to other neural diseases, and may be a suitable cell source in regenerative medicine for eye disorders..

Keyword: Retinal degeneration; Endothelial progenitor cells; Photoreceptors; Immunocytochemistry.