عنوان مقاله:

Differential gene expression by lithium chloride induction of adipose-derived stem cells into neural phenotype cells

محل انتشار:

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خلاصه مقاله:

Objective(s): Adipose-derived stem cells (ADSCs), with suitable and easy access, are multipotential cells that have the ability for differentiation into other mesodermal and transdifferentiate into neural phenotype cells. In this study, Lithium chloride (LiCl) was used for in vitro transdifferentiation of rat ADSCs into neuron-like cells (NLCs).Materials and Methods: ADSCs were isolated from the rats' perinephric region using Dulbecco's Modified Eagle's Medium (DMEM) with Fetal Bovine Serum (FBS), cultured for 3 passages, characterized by flowcytometry and differentiation into adipogenic and osteogenic phenotypes. The ADSCs were exposed to 0.1, 0.5, 1, 1.5, 2, 5, and 10 millimolar (mM) LiCl without serum for 24 hr. The optimum dose of LiCl was selected according the maximum viability of cells. The expression of neurofilament light chain (NfL), neurofilament high chain (NfH), and nestin was evaluated by immunocytochemistry. Quantitative reverse transcription polymerase chain reaction (qRT-PCR) was used to evaluate the amount of synaptophysin, neurogenin-1, neuroD1, NfL, NfH, and nestin genes' expression in ADSCs and NLCs.Results: The optimum dose of LiCl was 1 mM in 24 hr. The transdifferentiated ADSCs showed cytoplasmic extension with synapse-like formation. Synaptophysin, neurogenin-1, neuroD1, NfL, NfH, and nestin genes were significantly expressed more in NLCs than in ADSCs.Conclusion: LiCl can induce ADSCs into neural phenotype cells with higher expression of neural and neuronal genes.

کلمات کلیدی:

Induction, Lithium chloride, Neuron-like cells, Stem cells, Transdifferentiation