Original Paper

Inductive effect of Deprenyl and Dimethyl sulfoxide on proliferation and survival of the mesenchymal stem cells

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Abstract

Background and Objective: Research have been focused on the applying the chemical inducer for trans-differentiation the adult BMSCs into neural cell. So that, at the first should investigate the toxcity effect of the chemical inducer on the induced cells. Plasticity and easy accessibility of bone marrow mesenchymal stem cells is a unique charactristic for treatment of neural disorderies. This study was desgined to determine the inductive effect of Deprenyl and Dimethyl sulfoxide on proliferation and survival of the mesenchymal stem cells.

Materials and Methods: In this experimental study, BMSCs isolated from the adult rat bone marrow and cultured in αMEM containing 10% FBS. Cell identity for surface antigens was performed in third passage by immunocytochemistry and multipotancy capacity of BMSCs was done by BMSC differentiation into adipocytes and osteocytes. The cells were exposed to chemical agents (a: the αMEM medium supplemented with 2% DMSO, b: the αMEM medium supplemented with 10^{-8}M Deprenyl) for 24 houres and then transferred to αMEM containing 10% FBS cell survival and proliferation was evaluated after the 24, 48, 72 and 96 houres by MTT [3-(4-5-Dimethylthiazolyl-2-y1)-2,5-diphenyltetrazolium bromid] test. Data were analyzed using SPSS-16, One-Way ANOVA and Tukey tests.

Results: In addition to expression the surface antigens and adipogenic and osteogenic differentiation by BMSCs, MTT test results showed that proliferation and survival of induced-deprenyl and DMSO cells within 48, 72 and 96 hours after the induction was increased significantly than negative control group.

Conclusion: Deprenyl increases survival and cell proliferation compared to Dimethyl Sulfoxide. It can be used as cell inducer.

Keywords: Bone marrow mesenchymal stem cell, Deprenyl, Dimethyl Sulfoxide, MTT

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