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Poster Presentation

The Potential Use of In Vitro Transfection of Neural Stem Cells by Psectag2a-NT4 for Spinal Cord Injury Therapy

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Abstract

In our country, motor vehicle accident is known as the important cause of spinal cord injury (SCI). The cell therapy in some SCI could be more powerful using gene therapy. One of the approaches to gene therapy is cell based gene delivery. Neurotrophin 4.5 promotes the survival of sympathetic and peripheral sensory neurons and can induce differentiation of the PC12 cells. It activates two related tyrosine kinase receptors and shares these receptors with other neurotrophins. Primers were designed to amplify NT4 by addition of Xho I and EcoR V restriction sites on PCR product from pCMV-SPORT6 vector as a template. This product was purified and subcloned into the pSecTag2A to construct pSecTag2A-NT4 vector. Neural stem cells (NSCs) were cultured and evaluated for expression of stemness markers. NSCs transfected by lipofectamine reagent contained pSecTag2A-NT4 vector. Real time PCR and western blotting assessment showed that transfected cells secrete NT4 permanently in high level. Cell based gene therapy is a sustained gene delivery method. The NT4 protein can be used in treatment of SCI.

Keywords: Gene Therapy, PC12 Cell, Spinal Cord Injury, NT4.

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