



The 2nd International Neurotrauma Congress & the 4th International Roads Safety Congress

Shefa Neuroscience Research Center, Tehran, Iran, 18-20 February, 2015

The Neuroscience Journal of Shefaye Khatam

Volume 2, No. 4, Suppl. 3

Poster Presentation

Cell Therapy Approaches to Enhancing Neuro-Regeneration after Spinal Cord Injury: Generation Neural Stem Cells from Neurosphere-Derived Adipose Stem Cells Using Bioactive Substance TNT

Prastoo Barati¹, Taghi Tiraihi^{1,2*}, Marzieh Darvishi^{1,2}, Hadi Kazemi¹

¹Shefa Neuroscience Research Center, Khatam Alanbia Hospital, Tehran, Iran.

²Department of Anatomy, Tarbiat Modares University, Tehran, Iran.

Published: 18 February, 2015

Abstract

In the last few years, a lot of preclinical studies showed the therapeutic potential of stem cells in spinal cord injury (SCI). Neural stem cells (NSCs) can be differentiated into all cell types of spinal cord. NSCs are cells that maintain the capacity to differentiate into brain-specific cell types, and may also replace or repair of injury in central nervous system. Here in, we describe the efficient conversion of Adipose derived stem cells (ADSCs) into a neural stem cell-like under the influence of a factor inducing non-toxic bioactive substance TNT. ADSCs were isolated from adipose tissue of Wistar rat and were cultured. ADSCs were treated with bioactive substance TNT. These cells grew in neurosphere-like structures and differentiated to neural stem cells. Immunocytochemistry and RT-PCR techniques were performed to evaluate early neuroectodermal markers including SOX2, OCT4, NANOG, NeuroD and nestin. Our results showed that these markers expressed in high level. Also, NSCs were immunoreactive to NF68, NF200 and nestin. In addition, we confirmed the expression of SOX2, OCT4, NANOG and NeuroD genes by RT-PCR assay. The findings of this study provide a new method to generate NSCs from ADSCs by using non-toxic bioactive substance TNT, which can be helpful in cell therapy of SCI and degenerative diseases.

Keywords: Neuroregeneration, Cell Therapy, Neurodegenerative Disease.

***Corresponding Author:** Taghi Tiraihi

E-mail: ttiraihi@yahoo.com