

Combination Therapy with Astaxanthin and Epidermal Neural Crest Stem Cells Improves Motor Impairments and Increased Motor Neurons and Myelin Levels

Leila Mohaghegh Shalmani*, Neda Valian, Safura Pournajaf, Fatemeh Abbaszadeh, Leila Dargahi and Masoumeh Jorjani

Shahid Beheshti University of Medical Sciences, Iran

Abstract

Spinal cord injury (SCI) can lead to temporary or permanent loss of neurologic function. Nevertheless, the ideal treatment has not found for SCI. Since the SCI is a complex, multifaceted disease process so, combinatorial treatments can be a promising approach. Epidermal neural crest stem cells (EPI-NCSCs) are unique candidates with isolated from bulge hair follicles in adults due to the possibility of autologous transplantation. We evaluated whether combination of a potent antioxidant such as Astaxanthin (AST) and (EPI-NCSCs) transplantation could affect (SCI). The sever SCI induced by dropping a metal rod onto the exposed dorsal surface of the spinal cord on male rats with treated by Ast (0.2mM) and EPI-NCSCs ($10^6/10\mu\text{l}$ PBS) alone and combined. The Basso, Beattie and Bresnahan (BBB) test on days 1, 3, 7, 14, 21, 28, 35 and 42 post-injury was used for assessing of Motor function. The Motor neurons number and the myelin level were investigated on days 14 and 42 using Nissl and Luxol Fast Blue staining. All treatments improved motor function on days 7, 14, 21, 28, 35 and 42 compared to SCI. However combination therapy was more effective than Ast or EPI-NCSCs individually in behavioral improvement.



Biography:

Leila Mohaghegh Shalmani have received her pharm D degree in 2011. I am a Pharmacology PhD student at Shahid Beheshti University of Medical Sciences. At the moment I am working on my PhD thesis which explores therapeutic effects of Astaxanthin in spinal cord injury (SCI).



Speaker Publications:

1. "Houle, J. D. & Tessler, A. Repair of chronic spinal cord injury. *Exp Neurol* 182, 247–260 (2003).
2. "Tetzlaff, W. et al. A systematic review of cellular transplantation therapies for spinal cord injury. *J Neurotrauma* 28, 1611–1682 (2011)
3. "Cregg, J. M. et al. Functional regeneration beyond the glial scar. *Exp Neurol* 253, 197–207 (2014).
4. "Andrews, E. M., Richards, R. J., Yin, F. Q., Viapiano, M. S. & Jakeman, L. B. Alterations in chondroitin sulfate proteoglycan expression occur both at and far from the site of spinal contusion injury. *Exp Neurol* 235, 174–187 (2012).
5. "Busch, S. A. et al. Adult NG2+ cells are permissive to neurite outgrowth and stabilize sensory axons during macrophage-induced axonal dieback after spinal cord injury. *Journal of Neuroscience* 30, 255–265 (2010).

[9th International Conference on Brain Disorders & Therapeutics](#); August 21-22, 2020.

Abstract Citation:

Leila Mohaghegh Shalmani, Combination therapy with astaxanthin and epidermal neural crest stem cells improves motor impairments and increased motor neurons and myelin levels, *Brain Disorders* 2020, 9th International Conference on Brain Disorders & Therapeutics; August 21-22, 2020.

(<https://braindisorders.neuroconferences.com/abstract/2020/combination-therapy-with-astaxanthin-and-epidermal-neural-crest-stem-cells-improves-motor-impairments-and-increased-motor-neurons-and-myelin-levels>)