PERIPHERAL NERVE INJURY: ANALYSIS OF BIOMOLECULAR CHANGES IN NEURONS AND COMPATIBILITY OF CHITOSAN FOR PERIPHERAL NERVE REGENERATION

ABSTRACT

Poster Instructions

Title	PERIPHERAL NERVE INJURY: ANALYSIS OF BIOMOLECULAR CHANGES IN NEURONS AND COMPATIBILITY OF CHITOSAN FOR PERIPHERAL NERVE REGENERATION. Room: Poster Area - Session: D23 - Abstract Number: FENS-1750 - Poster Board Number: D052
Poster No:	D052
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Session:	D23: Poster Session - Motor neurons and muscle Poster boards: D039-058
Date:	Tuesday - July 08, 2014 12:15 - 13:15
Location:	Poster Area
Subtopic:	D.10 Motor neurons and muscle
Topic:	D.10 Motor neurons and muscle
Theme:	D. Sensory and motor systems

Peripheral nerve trauma or injuries may lead to sensory or motor function deficits if not properly treated. To improve peripheral nerve regeneration the surgical approaches have matched with new biomedical strategies; all this has been possible thanks to the more in-depth study of biomolecular mechanisms that promote nerve regeneration.

The aim of this study was twofold: i) evaluate the compatibility of a chitosan conduit for peripheral nerve repair and regeneration; ii) analyze molecular changes in the cellular body of sensory neurons after peripheral nerve injury. For the first task we analyzed morphological and biomolecular changes in a line of Schwann cells (RT4-D6P2T) cultured on chitosan membranes of different grade of acetylations.

In the second part we caused a peripheral nerve injury (crush of the median, ulnar and radial nerve) in a rat model and after 1,3,7,15 days and one month we took the Dorsal Root Ganglia (DRG) from C5-T1 level. We performed quantitative real-time PCR analysis looking for Neuregulin1 isoforms (a, ß, I/II and III), and ErbBs receptors (ErbB2 and ErbB3). Data show no changes in the ErbBs mRNA expression after injury. Expression levels of the soluble Neuregulin1 isoforms (type I/II) show an upregulation in the first three days from the lesion. At contrary for Neuregulin1 type III and ß mRNA expression we see an upregulation from 7 days after lesion. These results allow us think that nerve regeneration process should be divided in two temporary steps, regulated by different molecules such as the Neuregulin1 isoforms.