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Poster Presentation

A Biologically Active Motif of Laminin for Spinal Cord Regeneration

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Abstract

The majority of spinal cord injuries (SCIs) are happen during road traffic accidents. Injury at any level of the spinal cord will impair respiratory function, through the destruction of motor nuclei and descending motor tracts innervating diaphragmatic, thoracic, intercostal and abdominal accessory muscles. Consequently, the majority of patients die from respiratory complications. Reconstruction and regeneration of the central nervous system following injury is a formidable task. Nerve tissue engineering (NTE) is a promising strategy that has been used to treat neural injury. The biomaterials as a substrate on which cell populations can attach and migrate, play an important role in NTE. These materials can be implanted with a combination of neural progenitor cells as a cell delivery vehicle, and be utilized as a drug carrier to deliver growth factors. Self-assembly nanopeptides can be used in the fabrication of novel biomaterials which are assembled molecule by molecule to produce novel supramolecular architectures. Recently, some of the most promising new synthetic biomaterial scaffolds are composed of self-assembling peptides that can be modified to contain laminin motifs, such as Arg-Gly-Asp-Ser (RGDS), Tyr-Ile-Gly-Ser-Arg (YIGSR) and Ile-Lys-Val-Ala-Val (IKVAV). This Hypothesis suggests that YIGSR is an efficient and safe conduit matrix for nerve regeneration after SCIs.

Keywords: Spinal Cord Injury, Tissue Engineering, Biomaterial Scaffold.

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