Regenerating nerves on electrically conductive substrate

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Abstract

Injury to central nervous system (CNS) has been a challenge for scientists across the globe echoing the intrinsic inability of neurons to regenerate and hostile nonconducive niche at the lesion site. Despite arduous efforts, no therapy till date could make its place into clinics. Present scenario suggests an interdisciplinary approach might assist in tackling the issue. Working in the domain of nerve engineering, our lab has previously demonstrated the significance of electrical cues and topography in regenerating peripheral nerve, which ignited us to surmise that an electrically conductive biocompatible scaffold might augment nerve regeneration and functional recovery in CNS after inuury. We successfully fabricated chitosan gelatin sheets using electrospinning, which were further crosslinked to obtained desired degradation rate. Graphene was further added to induce conductivity in sheets and quantified using cyclic voltammetry. Biocompatibiliity of conductive electrospun scaffold was analysed by culturing neuroblastoma cell lines and SEM micrographs depicts the intended internetwork among cells. These results prompt us to conclude that the fabricated conductive electrospun substrate depicts prominent potential to regenerate damaged nerve.

Biography:

I am currently pursuing my PhD (3rd year) from Indian Institute of Technology (IIT) Kanpur, India after completing my B.Tech. I am currently working in the domain of nerve tissue engineering where we are aiming to design scaffold to enhance nerve regeneration.

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