

عنوان مقاله:

The Role of Electrical Conductivity upon Neural Cell Differentiation and Proliferation of Electrospun Nanofibers Based on Thermoplastic Urethane (TPU)/CNT

محل انتشار:

دوازدهمین سمینار بین المللی علوم و تکنولوژی پلیمر (سال: 1395)

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خلاصه مقاله:

Electrically conductive materials for the fabrication of scaffolds for neural tissue engineering purposes have attracted great attention. This is because electrical stimulation would improve neural cell growth, proliferation and differentiation. However appropriate mechanical properties and flexibility together with surface biocompatibility are required. In the present work attempts have been done to fabricate electrospun nanofibers based on a flexible thermoplastic urethane (TPU) and carbon nanotube as scaffold for neural regeneration with potential for electrical stimulation. Effects of the extent of electrical conductivities of TPU/CNT nanocomposites upon cell proliferation and cell differentiation have been investigated. Results revealed significant correlation between the electrical conductivity of the CNT dispersion state and behavior of the scaffold towards the seeded cells as well as differentiation towards the neural tissue. Correlation between the viscoelastic characteristics of the prepared TPU/CNT nanocomposites and cell signaling for the samples, before and after percolation threshold, has also been studied.

کلمات کلیدی:

Neural tissue engineering– Polyurethane– Carbon nanotube– Electrospinning– Scaffold

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/578242>

