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Derivation of dopaminergic neurons from embryonic stem cells using a silk nanofibrous scaffold

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The limited capcacity of the central nervous system in repairmen of neuronal population such as dopaminergic neuron cells suggests stem cell therapy for neurogenesis in Parkinson's disease. Also, stem cell therapy accompanied with scaffolds, is a promising treatment in neural tissue engineering to induce neural differentiation in damaged tissue of brain. Here we fabricated and used a silk nano fibrous scaffold for differentiation of embryonic stem like cells in to dopaminergic neuron cells. Embryonic stem cells, were cultured on fabricated Silk scaffolds. The neural differentiation was induced using a modified technique includes; culturing in the presence of Retinoic acid and neurobasal medium with 10 ng/ml epidermal growth factor, 20 ng/ml basic fibroblastic growth factor for 10 days. The neural differentiation was investigated using the evaluation of specific markers via immunocytochemistry and real-time technique. Our dates proved that silk scaffold support the differentiation of embryonic stem cells cells in to dopaminergic neuron. The expression of neural specific markers were significantly higher in the cells were cultured on fabricated Silk scaffolds in compare to monolayer control group. Electrospun silk nano fibrous scaffold is considered as a biological substitutes for neural differentiation of stem cells that is a crucial step in tissue engineering for neural tissue repair and regeneration.

Biography

Maryam Nazm Bojnordi has completed his PhD at Tarbiat Modares University. She is a Member of Scientific Staff of Anatomical Science at Mazandaran University of Medical Sciences. She has published more than 32 papers and has been serving as an Editorial Board Member of journals.

Notes:

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