

Electrospinning of Nanofibrous Meshes and Surface-Modification for Biomedical Application

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Abstract : Biomedical applications of electrospun nanofibrous meshes have been received tremendous attentions because of their unique structures and versatilities as biomaterials. Incorporation of growth factors in fibrous meshes can be performed by surface-modification and encapsulation. Those growth factors stimulate differentiation and proliferation of specific types of cells and thus lead tissue regenerations of specific cell types. Topographical cues of electrospun nanofibrous meshes also increase differentiation of specific cell types according to alignments of fibrous structures. Wound healing treatments of diabetic ulcers were performed using nanofibrous meshes encapsulating multiple growth factors. Aligned nanofibrous meshes and those with random configuration were compared for differentiating mesenchymal stem cells into neuronal cells. Thus, nanofibrous meshes can be applied to drug delivery carriers and matrix for promoting cellular proliferation.

Keywords : nanofiber, tissue, mesh, drug

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