

Fabrication of 3-dimensional layered electrospun scaffolds

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Electrospinning is a facile and useful technique to produce fibrous structure. In the field of tissue engineering, electrospinning has been utilized for the last two decade because of the ability to mimic the fibrous structure of the extracellular matrix (ECM). However, conventional electrospinning process produces 2-dimensional sheet-like structure which is not suitable for mimicking 3-d cellular environment. For this reason, there have been a lot of efforts to make 3-dimensional electrospun scaffolds. Here, a new method to create 3-dimensional thicker electrospun scaffold is introduced. In this study, a thick and layered scaffold was fabricated by simultaneous electrospinning of two polymer solutions. Polycaprolactone(PCL) and polyvinylpyrrolidone(PVP) were used in this technique, and a crosslinking agent, 4,4'-diazidostilbene-2,2'-disulfonic acid disodium salt(DAS), was contained in PVP to induce the layered phenomenon. The layered structure and the infiltrated cells both *in vivo* and *in vitro* were confirmed. This scaffold fabrication technique will be helpful to construct 3-dimensional electrospun scaffolds especially for mimicking layered structure such as blood vessel or skin.