Efficientively release controllable electrospun nanofiber using hydrogel microstructure

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One of important factors in drug therapy is control of drug release. In this study, our aim is release control using electrospun fibers and hydrogels. Polycarprolactone (PCL) which is a biodegradable polymer was used as fiber and the Polyethylene glycol (PEG) based hydrogel surround the fibers. Coaxial electrospinning was proposed as a one-step process for producing core-sheath nanofibers, which showed to prolong the time period of delivery effectively. However, single-nozzle electrospinning is more favorable than coaxial spinning, because a simple process and easy scale-up are essential requirements for reproducible production on a massive scale. The complex of electrospun fibers and hydrogel makes possible to control the release easily from single-nozzle electrospinning. Moreover we can fabricate microstructures such as microparticles using this method. So we expect this system will provide a new useful release system.