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PLA/PCL ELECTROSPUN MEMBRANES OF TAILORED FIBRES DIAMETER AS DRUG DELIVERY SYSTEMS

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Abstract

The main electrospinning parameters, *i.e.*, polymer concentration in the injectable solution, solvents used and their proportion, flow rate, voltage and distance to collector were herein systematically modified to analyse their particular influence in fibres diameter of electrospun membranes of poly(lactic acid), polycaprolactone and their mixture. As a result of this analysis, the procedures to obtain membranes of these polymers and blend with under- and above-micron-sized fibres were established, in which the solvents ratio (chloroform/methanol and dichloromethane/dimethylformamide) and voltage were found to play the major role. Moreover, the plausible differential effect of these fibres diameters (0.8 and 1.8 μm) in the controlled release of a molecule of interest was explored, using bovine serum albumin (BSA), proving that the most effective configuration for BSA release among those studied was the PLA-PCL combination in membranes of above-micron fibres diameter.

Keywords: polylactic acid, polycaprolactone, electrospinning, drug delivery, membrane

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