

Characterization and Development of Collagen Modified Biopolymers and Their Cell Growth Studies

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ABSTRACT

In this work, poly(ethylene glycol)/poly(D,L-lactide-co-glycolide)/poly(ethylene glycol) PEG/PLGA/PEG triblock copolymer was synthesized in several steps: (1) transformation of the PEG carboxylic groups into more reactive acyl halide groups, (2) coupling reaction with OH terminated PDLLG, (3) activation of PEG-tethered PDLLG with N-hydroxysuccinimide to produce a polymer more reactive to proteins and peptides. Collagen (type I) was coupled to PEG/PLGA/PEG triblock copolymer. The structure of the triblock copolymer and modified polymer were investigated by FTIR, NMR, GPC techniques. The attachment and growth of L929 mouse fibroblasts in vitro on the collagen modified polymer was quantified. Collagen modification of the polymer was shown to enhance the growth of cells.

Keywords: PEG/PLGA/PEG triblock copolymer, collagen and cell attachment