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COLLAGEN USE IN BIOCOMPATIBILITY ENHANCE OF POLYETHYLENE GLYCOL

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Abstract: New polymeric materials were prepared by mixing a biodegradable, water soluble synthetic polymer (polyethylene glycol-PEG) with a natural polymer with high degree of biocompatibility (type I collagen from bovine tendon). The blends were processed in the form of membranes by mixing aqueous solutions of components and drying of these mixtures. In vitro biocompatibility of polymer mixtures was evaluated by direct contact method, both qualitative methods (cytochemical staining cells with Giemsa) and quantitative methods (determination of cell viability in a culture of human dermal fibroblasts by MTT assay). Evaluation of these materials interaction with cell culture was also made by analyzing the activity of matrix metalloproteinases (MMP) by zymography. It was found that the mixture variant with the best degree of biocompatibility was PEG: Col 1:1 in combination ratio.

Keywords: synthetic polymers, natural polymers, mixtures, polyethylene glycol, collagen, NCTC cell line, biocompatibility, cell viability, matrix metalloproteinase.