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## Effect of Carbodiimide on the Structural, Mechanical and Biological Properties of Collagen Films

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Collagen is one of the most important proteins in the extracellular matrix. Due to its high biocompatibility, it is an attractive natural polymer and material for the creation of tissue-engineered matrices, in particular matrices that mimic the stroma of the cornea of the eye. In this work, type I collagen was extracted and characterized from animal tissues, and collagen films were formed on its basis. In order to create additional covalent bonds in the films, the

crosslinking agent 1-Ethyl-3-(3-dimethylaminopropyl)carbodiimide and N-Hydroxysuccinimide (EDC/NHS) were used. The effect of EDC/NHS treatment on the mechanical properties and degradation of type I collagen films was investigated. An increase in the stiffness of matrices and their resistance to biodegradation after collagen processing has been shown. An analysis of the effect of collagen processing with EDC/NHS on viability and morphology of SIRC corneal cells was carried out. It was shown that the treatment of films with a cross-linking agent increases the viability of SIRC cells and does not have a negative effect on their morphology.

**Keywords:** type I collagen, carbodiimide, SIRC cell line, biodegradation, mechanical properties