

56. PURIFICATION OF COLLAGEN FROM HUMAN UMBILICAL-PLACENTAL COMPLEX FOR BIOENGINEERING USE

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Introduction. Collagen is a structural protein found in large quantities in the animal kingdom and has vital functions in tissue formation, attachment and cell proliferation. As a biomaterial it has a wide use in medicine, namely in traumatology, ophthalmology, oncology, dentistry, combustiology, pharmacology, both in the form of a matrix and as a carrier of encapsulated substances. The obtaining of high purity collagen is an important condition for use in tissue engineering.

Aim of study. Evaluation of the purity of collagen extracted from the umbilical-placental complex using different surfactants

Methods and materials. Placenta and umbilical cord from the Tissue and Cell Bank were used. Protocols for the elimination of blood and non-collagenous proteins from the human umbilical-placental complex were tested using sodium dodecyl sulfate, sodium deoxycholate, CHAPS, Triton X-100, Chloramine T with hydrogen peroxide, EDTA, and the control group was treated with distilled water.

Results. The purification of the collagen extracted from the umbilical-placental complex using different surfactants determined a differentiated purity. Non-ionic Triton X-100 detergent and CHAPS were most effective in removing non-collagenous proteins and blood. The lowest purity collagen is obtained using Chloramine T with hydrogen peroxide.

Conclusion. Anionic surfactant Triton X - 100 is the most effective in obtaining of high purity collagen from the umbilical-placental complex and preserve its native structure.