THREE DIMENSIONAL POLYETHERSULPHONE SCAFFOLD FOR CHONDROCYTES CULTIVATION - THE FUTURE SUPPORTIVE MATERIAL FOR ARTICULAR CARTILAGE REGENERATION

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Abstract

The this paper method of obtaining broad-pore membranes for application as scaffolds for chondrocyte cultivation is described. These membranes were obtained from polyethersulfone. They are characterized by the presence of both macropores of relatively large diameter, as well as micropores. These membranes are intended first of all for use in cultivation of the cartilage cells (chondrocytes). The membranes are obtained by the phase inversion method followed by dissolving cellulose present in the membrane. Cellulose is a macropore precursor. Cellulose is dissolved by means of a copper hydroxide ammonia complex. The membranes obtained are not cyto-toxic. The culture of chondrocytes derived from White New Zeeland breed rabbits developed very well on these membranes. The cell cultures were studied by observation under an optical microscope and scanning electron microscope. The protein mass increase on the membrane was determined by flame analysis. The results of these experiments did not show any negative effects of the membranes on the cell culture. Just the opposite, the cartilage cells development on the membranes proceeded very well. The results obtained show that the membrane developed is a very good scaffold for cell cultivation.

Keywords: chondrocytes cultivation, polyethersulfone scaffolds, polyethersulfone membrane