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**THE IMPLANTATION OF PLASMA-MODIFIED POLYLACTIC ACID FILMS INTO  
THE ANTERIOR CHAMBER OF EYE**

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One of the directions in the treatment of the bullous keratopathy is the use of stem cells. However, cultivation of stem cells and their landing on the inner surface of the cornea in order to replace the endothelial defect without using a substrate is a big surgical problem. There is a high probability of cell loss during surgical procedures. Using of films based on polylactic acid (PLA) thin films with controlled solubility as a temporary material for stem cells may be an alternative to existing insoluble polymers. The purpose of this research is the study the influence of the plasma-modified PLA films implantation on the morphology of the cornea in vivo experiment.

The feedstock for the films was obtained by dissolving polylactic acid (PURASORB® PL 10, Netherlands) in the chloroform (CHCl<sub>3</sub>). Modification of films was carried out using the atmospheric pressure low-temperature plasma. The plasma treatment time was 30s. 12 pubescent female *Sylvilagus bachmani* rabbits weighing 2.0-2.5 kg were used. All animals were healthy and free of ocular diseases. The Siberian Medical State University Life Science Ethical Review Committee (protocol № 7892 from May 13th, 2019) approved all procedures. PLA films were implanted into the anterior chamber of one animal eye. All animals were instilled Tobramycin Drops (6 times per day), 0.1% Diclofenac Sodium Ophthalmic Solution (3 times per day) and 0.05% Vitabact (4 times per day) in the postoperative period. The overall duration of the experiment comprised 21 days.

It was found that the implantation of the plasma-modified PLA film did not increase an intraocular pressure. According to optical coherent tomography, the cornea had a normal thickness (430-450 μm). 4-5 layers of squamous epithelium with normochromic nuclei represented the anterior epithelium of the experimental animal. Bowman's membrane was unchanged and visualized as a homogeneous eosinophilic strip. Thin-walled newly formed blood vessels with a specific volume of not more than 5%,  $p > 0.05$ , were found in the corneal stroma. Collagen fibers were located compactly. In some places collagen fibers had increased twisted stroke. Mild leukocyte infiltration (specific volume of leukocyte was less than 3.2%,  $p < 0.05$ ) was noted in the stroma. Descemet's membrane was visualized throughout. A single layer of cells represented the endothelial layer. In some places, proliferation of endothelial cells in the form of process cells was observed.

As a result of the research, it was found that the implantation of the plasma-modified PLA films contributes to the development of the mild inflammatory response (mild leukocyte infiltration, newly formed blood vessels, increased twisted stroke of collagen fibers, and presence of strongly acid sulfated GAGs) as a result of the surgery. The study showed the possibility of the plasma-modified PLA films using as a corneal implant in a future.

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