

Peculiarities obtaining of microtubes chitosan interfacial reaction of polymer-analogous transformations

© Natalia O. Gegel,^{1*} Tatiana S. Babicheva,^{1,2} and Anna B. Shipovskaya^{1,2}

¹ Education and Research Institute of Nanostructures and Biosystems. Saratov State University.

Astrakhanskaya St., 83. Saratov, 410012. Russia. Phone: +7 (8452) 21-07-59. E-mail: GegelNO@yandex.ru

² Basic Department of Polymers. Saratov State University. Astrakhanskaya St., 83. Saratov, 410012. Russia.

Phone: +7 (8452) 51-69-57. E-mail: ShipovskayaAB@rambler.ru

*Supervising author; ⁺Corresponding author

Keywords: chitosan, a microtubule, molding, polymer-analogous transformations, salting-out agent, biodegradable vascular prosthesis.

Abstract

The paper deals with the process of obtaining and properties of new materials based on chitosan in the form of seamless hollow cylindrical structures (microtubes) on the interfacial reaction of polymer conversion from polysalt soluble form to an insoluble form in the water surfactant-polybase or polyelectrolyte complex. The influence of the salting-out agent nature on the mechanism of the chemical reaction proceeding during the microtube wall formation was estimated. Their morphology, physico-mechanical, elastic-deformation and biocompatibility properties were examined. High adhesion and high proliferative activity of the epithelial-like MA-104 cellular culture on the surface of our microtubular substrates in model *in vitro* experiments were revealed.