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Thematic course: Synthesis and study of the properties of composite materials based on cellulose and chitosan containing various therapeutic agents. Part 1.

The effect of drying and shelf life on the properties of chitosan composites

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Abstract

One of the high-potential areas in the search for new medical materials was the study, creation and introduction into practice of materials based on chitosan (Ct). The unique complex of Ct properties, such as biocompatibility, biodegradability, non-toxicity against the background of high biological and sorption activity, makes it possible to attribute this aminopolysaccharide to a tiny group of industrially available, environmentally safe polymers and, to potentially new biomaterials based on it, extremely suitable for medical use. Ct rapidly undergoes biodegradation under the action of enzymes of a living organism, without forming toxic substances. Therefore, it can become an excellent biodegradable protective material for the treatment of open wounds and burns. The enzyme-containing chitosan materials – which are advisable to use at the stage of cleansing the wound from necrotic tissue and in the cosmetic therapy of keloid scars – are of exceptional interest. At the same time, it is possible in principle to control the speed of biological and hydrolytic degradation of materials on the wound surface.

Due to its positive charge in acidic and neutral environments, chitosan has bioadhesiveness, bactericidal effect and promotes wound healing, absorbs biological fluids and helps tissue regeneration.

Immobilization in chitosan gel, drying and storing various therapeutic agents and their mixtures in different directions affects the properties of the immobilized drug and its biological activity.

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