

## Plasticized films based on chitosan succinyl

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### Abstract

The article is devoted to the development of new approaches to the creation of modern wound healing highly elastic films with good hemocompatibility based on a water-soluble chitosan derivative – the succinyl of chitosan. These trips are based on the use of plasticizers. It was established that chitosan succinyl, in contrast to chitosan, is capable of exhibiting insignificant forced-elastic deformation, but still not sufficient to use unmodified films based on it as wound healing coatings. The deformation-strength properties of the films were studied on a universal tensile testing machine. The tensile stress ( $\sigma$ ) was determined taking into account the cross-sectional area of the sample taken for testing, and expressed in MPa. The elongation at break ( $\epsilon$ ) was calculated taking into account the initial length of the film sample taken for testing, and expressed as a percentage. The values of elongation at break and tensile stress were calculated as the arithmetic average of five parallel measurements. The hemocompatibility of chitosan-glycerol succinyl systems was evaluated by determining the osmotic resistance of healthy human erythrocytes using a unified method in the modification of L.I. Idelson. It is shown that the introduction of glycerol as a plasticizer in the process of film formation leads to a significant improvement in their physical and mechanical characteristics. An increase in the glycerol content in the film up to 50 wt% is accompanied by a significant increase in tensile elongation. The value of the breaking stress in this case, naturally decreases. But, since the value of the breaking stress in any case remains at the level of the necessary values, the observed drop in strength indicators is not fundamental. The stabilizing effect of the succinyl of chitosan-glycerin systems on cell membranes under physiological conditions is proved, which suggests their high hemocompatibility.

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