

## Modified Chitosan Films for Medical Application

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Chitosan is the natural polymer, with large prospect of use in various areas especially in medicine. The medico-biological researches have shown favourable influence of chitosan on the substances exchange and regeneration processes in human organism and, in particular, on process of wounds healing. The aminogroups in chitosan's macromolecules promotes the complexation with metals, ionic surfactants, various polyelectrolytes, including, proteins, and permits over a wide range to adjust the solubility and swelling degree in water environments. The goal of this work was to elaborate highswelling chitosan films, having the complex effect on wound. On the basis of investigation of interaction in a system acetic acid salt of chitosan - proteins there were determined the conditions which supply the different speed of protein allocation in model media (0,9 M solution of NaCl). Modifying of a films surface with sodium dodecylsulphate, in a course of which was formed insoluble surfactant-polyelectrilyte complex (SPEC), improves adhesive property of chitosan films and provides high degrees of swelling ( up to 4000 % ) and, accordingly, sorption ability without loss of mechanical properties. Besides the formation of SPEC decrease the speed of enzyme release by a factor of  $10^2$  and produce the conditions of prolong action of it. At study of a structure and morphology of a surface modified films is established, that the swelling film consists of different layers, essentially distinguished on properties: of a surface insoluble layer of SPEC and internal layer, representing a swelling gel of chitosan. The results give the basis to consider, that the application of such films as covers on wound will allow to reach complex effect - to execute prolong enzymetherapy, antimicrobial effect and effective removal of purulent-necrotic masses. The combination of hydrophilic and hydrophobic properties opens prospects of use surface-modified chitosan films for creation of transdermal therapy systems.