

## Use of chitosan as a carrier for proteinases and Miramistin for obtaining of enzyme-containing gel

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**Keywords:** proteinases, chitosan, Miramistin, inactivation, storing, wound healing, medical materials.

### Abstract

Nowadays creation of new wound healing materials is one of the most relevant problems of modern pharmaceutical science. One of the most comfortable forms for patients is gels and ointments. The choice of an optimal therapeutic form and rational way of injection of drugs in organism are the essential parameters in wound treatment. The absence of interaction between compounds allows estimating the stability of pharmacological activity of each biologically active compound added in composition. The creation of systems with controlled drug release to a damaged organ is one of the most perspective ways of development of today's science. In this paper we studied an interaction between solutions of succinoyl chitosan or acid soluble chitosan and (or) Miramistin and different enzymes (proteinases). We proposed a scheme of obtained derivatives of chitosan and proteinases. Using methods of adsorb spectroscopy (IR and UV-Vis) we studied designed derivatives of chitosan different enzymes. We studied physical-chemical and biological properties of gels based on chitosan that contains enzymes and/or Miramistin. Based on our studies of effect of temperature and time of exposure we calculated the effective constants of inactivation rate of studied systems in 1/15M K-Na phosphate buffer at pH 6.2. We stated that chitosan can stabilize studied enzymes in the processes of thermal inactivation under different temperatures in water solutions. Also it was shown that Miramistin also could stabilize trypsin under high temperatures. We studied the effect of acid-stable inhibitor from the urine of man (IAC) on the enzymatic activity of modified and not modified forms of trypsin. In our research we showed that addition of different biocidal agents into chitosan gel of adjusted concentration does not affect its biological activity. Obtained results confirm that there is a possibility to add studied biocidal agents in proposed systems without any loss of activity of our materials.

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- Full Paper** \_\_\_\_ E.E. Dosadina, L.L. Brkich, N.V. Pyatigorskaya, M.A. Bikineeva, A.Y. Evdokimenko, E.E. Savelyeva, E.O. Medusheva, A.S. Kulagina, L.A. Pavlova, and A.A. Belov
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