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²*Semenov Institute of Chemical Physics, Russian Academy of Sciences, Moscow, Russian Federation*
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Institute of polymer chemistry and physics Academy of Sciences of the Republic of Uzbekistan, Tashkent, 100128, Uzbekistan
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S.A. Eremin¹, S.S. Babkina², Yu.S. Lebedin³
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- P 08** **LIQUID POLYMER SUBSTANCES IN SURGERY**
O.A. Legonkova¹, A.V. Chupin¹, A.C. Оганнясян¹, V.V. Stafford², I.P. Savchenkova²
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BIOLOGICALLY ACTIVE FILMS AND FIBERS BASED ON CHITOSAN CROSS-LINKED BY GENIPIN**N.R. Kildeeva, N.A. Sazhnev, V.A. Zakhsrova, A.A. Gubochkina***A.N. Kosygin Russian State University, Moscow, Russia*

Chitosan is a promising environment friendly polymer packaging material due to its biodegradability exceptional film forming capacity, great mechanical strength, appropriate barrier property along with intrinsic antioxidant and antimicrobial features [1, 2]. Films and fibers obtained from chitosan solutions are water-soluble. Bifunctional reagents are used to obtain insoluble chitosan-based films, fibers, and other materials with high rate of water swelling.

Crosslinking with genipin (Gp), which is a reagent of natural origin, improves swelling, water resistance and mechanical properties of the biopolymeric materials [3, 4]. It is shown that the properties, functional characteristics (swelling degree, biodegradation rate) and porous morphology of the obtained materials depend on the ratio of functional groups in the chitosan acetate– Gp system. Cross-linking of the chitosan by a bifunctional reagent in the solution fixes the mutual location of polymer chains, not allowing them to take equilibrium conformations during solvent evaporation, which leads to a deterioration in the physical and mechanical properties of the resulting films and fibers. Only at a very low content of the cross-linking reagent (0.0025 mol/mol), at which there is no gel formation in the molding solution, fixation of macromolecular chains occurs in the position where intermolecular interactions are realized to the greatest extent, which, in its turn, leads to a significant increase in the strength of chitosan materials. The results of research into the properties of chitosan films with significantly different Gp contents can be used to determine the direction of programming of cross-linked biopolymer films and fibers properties for food packaging, edible coatings or for medical use to increase strength and regulate moisture absorption. Biologically active films based on chitosan cross-linked by Gp have been used as a biocompatible therapeutic system for the controlled delivery of an anesthetic agent. The features of the mechanism of release of lidocaine from cross-linked chitosan films have been established.

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2. Lai, J.-Y., Li, Y.-T., Wang, T.-P. // Int. J. Mol. Sci., 2010, vol. 11, no. 12, pp. 5256–5272.
3. R.A.A. Muzzarelli. // Carbohydrate Polymers. 2009. V.77. No 1. P.1–9.
4. N.R. Kil'deeva, M.A. Kasatkina, S.N. Mikhailov //Polymer Science, Series D. 2017. T.10. No. 2. C. 189–193.

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DETECTION OF ANTIBIOTICS AND MYCOTOXINS BY CHEMILUMISCENCE ENZYME-LINKED IMMUNOSORBENT ASSAY (CL-ELISA)**S.A. Eremin¹, S.S. Babkina², Yu.S. Lebedin³**¹ *M.V. Lomonosov Moscow State University, 119991 Moscow, Leninskie Gory 1, Russia*² *Russian Technological University "(RTU MIREA), Institute of Fine Chemical Technologies named after M.V. Lomonosova, 119454 Moscow, Prospect Vernadsky, 86, Russia*³ *XEMA Company Limited, 105264 Moscow, 9 Parkovaya str., 48, Russia*

The immunochemical methods based on the specific and high affinity antibodies are widely used for high-throughput screening (HTS) and monitoring of food contaminants. At first it is important for detection of poisons and toxic organic chemicals like pesticides, antibiotics, mycotoxins and others. The Enzyme-Linked Immunosorbent Assay (ELISA) is one of widely used immunoassays. The ELISA could be optimized with photometric and chemiluminescent detection. The method was optimized for full automatic analyzer. The experimental ELISA kits for antibiotics and mycotoxins were produced by "XEMA" (Russia) and were used as simple, quick, preliminary test for detection toxic compounds in food sample.

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