RESEARCH OF ANTIBACTERIAL PROPERTIES OF CHITOSAN AND ITS DERIVATIVES IN RELATION TO VARIOUS MICROORGANISMS

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During last years researches covering such areas as affect of some biologically active polymers upon pathogens of various diseases have being widely developed as well as researches aimed at determination of mechanism of influence upon pathogenesis processes and specific effect of natural polysaccharides, such as chitin, pectin and their derivatives on live systems. This interest is caused by biological properties of these polymers which allow relating them to the parapharmaceutics group – natural substances with distinctly pronounced pharmacological activity.

Mechanism of influence of natural polysaccharides upon central and peripheral immunity organs, antibody genesis, hemopoietic stem cell and immune system as a whole has not been studied enough yet. At that it is interesting to research experimentally effect of polysaccharides in skin wounds (burns) and pyodermatitis. Investigation of these issues would allow developing on the basis of local row materials new high-efficiently medicaments for treatment and prevention of various disorders due to target effect upon certain types of malignant bacterium.

Tests of sensitivity of different cultures to samples of polymeric chemicals of various concentration and compositions have been carried out. Chemicals created on the basis of chitin (Bombyx mori), chitosan produced on its basis, polymetallic complexes of chitosan and nanostructural chitosan-based, macroporous chitosan-based and pectin-based systems were used for these trials.

It was found that chitosan-based chemicals and chemicals created on the basis of its derivatives had quite pronounced effect upon such cultures, as streptococcus, blue pus bacillus and salmonellas. It is important to note that antibacterial effect of polymeric chemical for sure increases when their

concentration grows and this increase relates first of all to aforesaid microbes though additional to them such cultures as enterococcus as salmonella and shigellosis also appear. This allows to recommend polymeric chemical based on chitin and its derivatives for treatment of pyoinflammatory infections of coccus and pseudomonade etiology as well as for treatment of prevalent intestinal infections, such as esherehia typhoid and paratyphoid and shigellosis.

Chitosan influence upon pathogenic microbe flora supposedly takes place because chitosan demolishes integrity of the external microbe membrane which includes lipopolysaccharide, glycoprotein and phospholipid. Demolition of the protective membrane leads to higher vulnerability of microorganism and increases its sensitivity to antibiotics.