Thematic area of your work: Nanochemistry and Nanobiotechnology

ACTIVITY OF LIPOSOMAL ANTIMICROBIC PREPARATIONS

CONCERNING MIXED INFECTIONS

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Most skin infections are mixed and caused by associations of fungus and bacteria which form biofilms. These associations more often consist of *Candida spp+ Staphylococcus spp.* Mixed infections have more heavy clinical disease course so their treatment is complicated.

Mixed infections are caused by decrease of immunity, wide spread of resistant strains, impossibility for antimicrobic preparations to penetrate into biofilms.

Nanovesicles are known to increase activity of preparations, decrease their toxicity and therapeutic dozes.

The purpose of the given work is studying of the antimicrobial and antifungal efficiency of the liposomal preparations in their using for treatment mixed skin infections.

The antimicrobial activity of liposomal antibiotics, liposomal phages and liposomal antifungal preparations were studied in vitro. In this study we investigated the expression of the genes connected with formation of fungal biofilms and also a resistency of the staphylococcal strains on presence of gene MecA during of the preparations action on early stages of biofilms formation. Liposomal antimicrobial preparations were more effective than commercial preparations concerning *Candida albicans* and *Staphylococcus aureus* infections. Use of the liposomal antibiotics or phages with liposomal antifungal preparations reduced therapeutic dozes of these preparations in 7 - 10 times against *Candida albicans* and *Staphylococcus aureus.* The efficiency of the liposomal antimicrobial preparations depended on the structure and the charge of liposomes.

The received results enable to predict the using of liposomal antimicrobic substances for increase of pharmacological efficiency in treatment of mixed skin infections.