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**NEW ANTI-MICROBIAL COMPOSITION FOR TREATMENT
OF TEXTILE GARMENTS**

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This research considers the antimicrobial effect of the new composition for treatment of textile materials on the basis of bio-surfactants. The minimum bacteriostatic, fungistatic, bactericidal and fungicidal concentrations of the elaborated composition were determined. The influence of different fiber and fabric samples (cotton, polyester fiber and their mixtures) on the biofilm of cultures of microorganisms was established. Zones of growth of retardation of cultures and the possibility of retrieval of culture of autochthonous obligate representatives of human microflora skin after their removal from the surface with the investigated flap were determined.

The screening study was performed on the following test cultures of reference microorganisms with different microbial loads: *S. aureus* ATCC 25923 (microbial load - 10^5); *C. albicans* ATCC 885-653 (microbial load - 10^3); *E. coli* ATCC 25922 (microbial load - 10^5).

Sensitivity of the test cultures to the developed composition was established by the method of double serial dilutions in sterile polystyrene tablets. A working inoculum of microorganisms was prepared from a 24-hour bacterial culture (105 CFU/ml) and a 48-hour culture of the yeast *Candida* (103 CFU/ml), the concentration of microorganisms was determined according to the McFarland standard [1].

The next stage of the study was the determination of the effect of material samples of cotton, polyester fiber and their mixtures on subsequent reference and clinical strains of cultures of microorganisms with different microbial loads by diffusion.

Determination of the effect of the components of the compositions on biofilm cultures of microorganisms was carried out as follows: we placed a disk of sterile filter paper on a Petri dish with a test culture lawn of each strain of the microorganism and applied 0.1 ml of test composition on this disk. The results were calculated after cultivation under optimal conditions and time for each crop by measuring the diameter of the growth retardation zones around the disc on the lawn.

The control was carried out by checking the sterility of the obtained solutions and material samples, the viability of reference and clinical strains of cultures of microorganisms and the quality of nutrient media.

A microbiological study on the sensitivity of reference and clinical strains of microorganisms of the composition of the following composition (mol,%) [2]: cocamide DEA from 60 to 70% and a derivative of Biguanidine from 30 to 40% was conducted.

The study of the spectrum of antimicrobial properties of the composition cocamide DEA / derivative of Biguanidine (C = 2.5 g/l) showed the following result [1, 2]. The minimum bacteriostatic concentration was in dilutions from 1:32 to 1:128 for cultures of *S. aureus* strains, and the cidal effect was observed in the range from 1:16 to 1:64. The minimum bacteriostatic concentration was displayed in dilutions from 1:16 to 1:64 for *E. coli*, and the minimum bacteriocidal concentration was in the range from 1: 8 to 1:32. Antifungal properties were determined in dilutions from 1:16 to 1:128 (the minimum fungistatic concentration) and from 1:8 to 1:64 (minimum fungicidal concentration) for yeast-like fungi of the genus *Candida*.

It was found that the use of a composition on the basis of bio-surfactants during washing, wet cleaning and finishing with special purpose products (for military, athletes, etc.) and home textiles restores the microflora of the skin (*P. freudenreichii* culture) to 10^4 - 10^5 cells/ml after 48 hours of fabric sample exposure in the sterility control environment and enhances the ecological safety of the processes of garment treatment [1, 3].

The results of research show the retardation of growth of cultures of *S. aureus*, *C. albicans*, *S. epidermidis*, *P. freudenreichii* and indicate the promotion of treated materials to decontamination of infectious agents from the skin of patients with chronic dermatoses. In addition, properly treated textiles can help to restore the indigenous obligate microflora of the skin.

The use of fabrics and textiles treated with compositions containing bio-surfactants is promising for a comprehensive study of their application as an element of skin care of patients with chronic and severe dermatoses and infectious agents that colonize the skin in the pathogenesis.

References

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