INFLUENCE OF METALLIC AND METAL COMPLEX NANOPARTICLES ON BACTERIAL POPULATIONS

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Abstract – The method of scanning electron microscopy was proved to be useful in revealing a series of morphological changes occurring in bacterial populations under the influence of silver nanoparticles and manganese phthalocyanine. The strains of *E. coli*, *S. aureus* and *S. enteritidis* were used as test cultures. Bactericidal effect of metal and metal complex nanoparticles was shown to depend on their concentration in the preparation. The higher was the concentration of nanoparticles, the deeper was the damage of cellular structures and the more pronounced was the disinfecting effect of the drug developed. It was shown that the method of scanning electron microscopy provided an opportunity to evaluate the effect of the preparation not just on a separate bacterial cell, but on bacteria organized in colonies and micro-colonies, in whole. Unique properties of nanomaterials combined with their biological activity can be applied for creating a new class of antibacterial agents.

Keywords: silver nanoparticles, metallocomplexes of phthalocyanines, scanning electron microscopy, morphology of bacterial population.