BACTERICIDAL EFFECT OF GREEN SILVER NANOPARTICLES AGAINST *ENTEROCOCCUS HIRAE*

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The growing resistance to antibiotics among opportunistic and pathogenic microorganisms requires the development of new approaches to overcome the antibiotic resistance. The application of silver nanoparticles (Ag NPs) could be a solution of this problem [1]. Ag NPs obtained by the "green synthesis" method are of interest. Cyanobacteria *Spirulina platensis*, which is known for its wide application in biomedicine and biotechnology [2], can be a valuable platform for NPs green synthesis.

In this work, the effect of *S. platensis*-mediated Ag NPs on the growth and survival of *Enterococcus hirae* ATCC 9790 was investigated. Biogenic Ag NPs have an average size of ~30 nm. *E. hirae* is a gram-positive bacterium. Among representatives of the genus *Enterococcus*, there are pathogenic forms that cause various human diseases, such as infections of the gastrointestinal tract, genitourinary and central nervous systems.

The Ag NPs demonstrate a concentration-dependent inhibitory effect on *E. hirae*, which is expressed by the decrease of the bacterial specific growth rate and the number of viable colonies. The addition of 10-20 μg/mL Ag NPs led to a ~4-4.5-fold decrease in bacterial growth rate. Moreover, the number of viable colonies of *E. hirae* was reduced by 90-95%, indicating the bactericidal effect of biogenic Ag NPs. Biogenic NPs demonstrate a bactericidal effect against *E. hirae*, which can be coupled with small size of NPs and their penetration into the bacterial cell.

Thus, *S. platensis*-mediated NPs are the promising antimicrobial agents, which can be used in biomedicine for the treatment of various infections.

Bibliographic references

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