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## CONTEMPORANE ASPECTS OF PRACTICAL USE OF BACTERIOPHAGES IN MEDICINE

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### Summary

**Background.** Against the backdrop of the growing problem of antibiotic resistance in the world, especially the variant of multidrug - resistance (MDR), the attention of scientists is focused on finding alternative methods of combating bacterial infections. In recent years, increasing attention has been paid to bacteriophages. The objectives of this review were to evaluate the possibilities and prospects for using bacteriophages in solving modern problems of medical practice.

**Materials and methods.** The research is related to the analysis of bibliographic sources identified in PubMed, NCBI, EMBASE, Research Gate Medline for the last few years.

**Results.** Bacteriophages are viruses that are specific bacterial pathogens that infect bacterial cells, actively multiplying in them and leading to their lysis. The advantages and negative aspects of phage therapy are outlined, an overview of the successful use of mono- and combined preparations of bacteriophages in medical practice, modern directions are described the use of bacteriophages not only for therapeutic, but also for preventive purposes, based on the latest achievements of genetic engineering and biotechnology. The mechanism of interaction with a bacterial cell and the life cycle of phages make it possible to use them for the treatment and prevention of bacterial infections, including combined ones. And thus bacteriophages can be a promising alternative to antibiotic therapy. Unlike antibiotics, which kill pathogenic bacteria while also destroying normal microbiota, causing a whole new set of problems, each phage has actually evolved to more specifically target specific bacterial strains or species. This feature makes phage therapy an attractive alternative for fighting infections, especially those caused by multidrug-resistant bacteria such as *Pseudomonas aeruginosa*, *Streptococci spp.*, *Staphylococcus aureus*, *Escherichia coli*, *Enterococcus faecalis*, *Klebsiella pneumoniae*, *Proteus mirabilis* and others, which have strong adaptive mechanisms, are capable of forming biofilms, both on medical instruments and are a very effective protective factor in vivo, etc. MDR has become a serious threat to human life and a significant burden for healthcare and the global economy. One of the most important problems of modern public health is the problem of MDR associated with the provision of medical care. Bacteriophages have been proposed as an alternative to antimicrobials for the treatment of MDR bacteria.

**Conclusions.** To address the increasing concern of antibiotic-resistant bacterial infections, it is imperative to promptly initiate a careful evaluation and implementation of phage therapy as a sustainable treatment option. Despite the potential problems with widespread availability of phage therapy, its implementation can bring social and economic benefits, significantly improving patient outcomes.

**Keywords:** bacteriophages, alternative therapy, antibioresistance