

**MICROBIOLOGICAL JUSTIFICATION OF THE USE OF BACTERIA  
IN THE TREATMENT OF ONCOGEN DISEASES**

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**Introduction.** Oncogenic diseases are found worldwide and now rank second (after cardiovascular) among all diseases. The use of bacteria in the treatment of oncogenic diseases has been known since the time of the American scientist W. Coley (XIX century), who successfully introduced into the tumor a mixture of living and killed bacteria. The tumor did not grow after that, but there were many side effects. Later, radiation and chemotherapy therapy sidelined these studies. Over time, the study was continued and bacterial-based drugs appeared in the arsenal of treatment for oncogenic diseases.

The **aim** of the study was to analyze all existing bacteria-based preparations for the treatment of oncogenic diseases and to prove the prospects for their use.

**Materials and methods:** analysis of scientific literature and results of advanced research in the field of microbiology and pharmacology.

**Results and discussion.** According to the literature, it has been established that since 70 years of the XIX century the following bacteria have been used in the treatment of oncogenic diseases: tularemia vaccine in the complex therapy of cancer of the uterus and lungs, BCG vaccine for prevention of relapse of gallbladder cancer and others.

Recent advances in genetic engineering make it possible to return to these studies.

According to the literature, more than 10 species of Gram-positive and Gram-negative bacteria have been identified, which can be potentially significant in the treatment of oncogenic diseases. These bacteria include representatives of different genera: Clostridium, Escherichia, Salmonella, Listeria, Bifidobacterium and others.

Clostridia is the most promising bacterial family. They are sensitive to antibiotics, have high proteolysis activity. These are anaerobic bacteria that live in oxygen-free conditions, and tumors have a very low percentage of oxygen, which causes the bacteria to search for the tumor. Living bacteria kill the tumor with their enzymes and then use the remains of the tumor as a source of nutrients. The immune system is activated, bacterial and cancer cells are destroyed.

Salmonella – their attenuated strains exhibit an induction immune response.

Listeria in live recombinant vaccines - activate antitumor immunity.

A promising area is the use of bacteria as vectors (carriers) of enzymes to tumors or as vectors - producers of therapeutically active substances (toxins).

E tumors that are completely resistant to bacterial therapy then need to use chemo and bacterial therapy together.

There are many studies using the simplest (trypanosomes) and fungi (trichoderma).

**Conclusions.** Analyzing all the above, we make the following conclusion: the use of bacteria in the treatment of oncogenic diseases is a promising area of experimental oncology.

## **PANDEMICS OF OUR TIME: THE EMERGENCE OF NEW INFECTIOUS DISEASES OR THE RE-EMERGENCE OF “OLD” INFECTIOUS DISEASES**

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**Introduction.** The World Health Organization warned in its 2007 report that infectious diseases are emerging at a rate that has not been seen before. Since the 1970s, about 40 infectious diseases have been discovered, including SARS, MERS, Ebola, chikungunya, avian flu, swine flu and, most recently, Zika. With people traveling much more frequently and far greater distances than in the past, living in more densely populated areas, and coming into closer contact with wild animals, the potential for emerging infectious diseases to spread rapidly and cause global epidemics is a major concern.

**Aim.** To study the etiology and specifics of epidemiology of modern pandemics, the role of known and new infectious factors in their development.

**Materials and methods.** Analysis of the modern scientific literature and World Health Organization publications on the development of modern pandemics.

**Results and discussion.** Emerging infectious diseases are infections that have recently appeared within a population or those whose incidence or geographic range is rapidly increasing or threatens to