

**THE COMPOSITION AND EFFECTS OF ANTIBIOTICS ON THE HUMAN BODY.
HOW TO TAKE ANTIBIOTICS CORRECTLY, AND THEIR SIDE EFFECTS.
ANTIBIOTIC RESISTANCE IS A SILENT GLOBAL THREAT****Mamatmusayeva Tamilla Bakhriddinovna**

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Abstract: This article discusses the composition and mechanisms of action of antibiotics, their effect on the human body, the rules of rational use and the most common side effects. Special attention is paid to the phenomenon of antibiotic resistance, the resistance of bacteria to the action of antibacterial drugs, which has become one of the most serious global threats in the field of healthcare today. The material is based on modern scientific data and recommendations of international organizations.

Keywords: antibiotics, bacterial infections, composition of antibiotics, side effects, rational antibacterial therapy, antibiotic resistance, bacterial resistance, global threat.

Introduction: Antibiotics are the most important class of medicines that have played a key role in reducing deaths from infectious diseases. They have made it possible to effectively treat bacterial infections, prevent complications after surgery, and control outbreaks of dangerous diseases. However, the use of antibiotics requires strict adherence to the rules, since improper use leads to the development of side effects and the formation of resistant bacterial strains. In the context of widespread and often unjustified use of antibiotics, the problem of antibiotic resistance is becoming more urgent.

The composition and mechanism of action of antibiotics:

Antibiotics are chemicals of natural, semi-synthetic or synthetic origin, capable of suppressing the activity or completely destroying bacteria.

By origin, antibiotics are divided into:

- Natural — they are isolated from fungi, bacteria, actinomycetes (for example, penicillin).
- Semi—synthetic - modified natural molecules with improved properties (amoxicillin, macrolides).
- Synthetic — completely chemically created (fluoroquinolones).

The main mechanisms of action of antibiotics are:

1. Disruption of cell wall synthesis

The bacterium loses its strength and collapses.

(Penicillins, cephalosporins)

2. Blocking protein synthesis

Stopping the growth and division of bacteria.

(Tetracyclines, macrolides)

3. Suppression of DNA and RNA synthesis

The bacterium loses its ability to reproduce and dies.

(Fluoroquinolones)

Each group of antibiotics acts on specific types of bacteria, so the selection of the drug should always be carried out by a doctor.

The effects of antibiotics on the human body:

Antibiotics have a dual effect:

Positive effects:

- destroy pathogenic bacteria;
- prevent complications of bacterial infections;
- allow complex surgical operations to be performed;
- Help control chronic bacterial diseases.

Negative effects:

- disrupt the intestinal microflora;
- may cause allergic reactions;
- affect liver or kidney function (in some groups);
- increase the body's sensitivity to other infections when used improperly.

The body reacts to antibiotics individually, which makes medical monitoring important.

Rules for the rational use of antibiotics:

To maintain their effectiveness, the following principles must be followed::

1. Use only as prescribed by a doctor

Antibiotics do not act on viruses, so their appointment for acute respiratory viral infections or influenza is impractical.

2. Strict adherence to dosage and administration regimen

The intervals between doses should be constant in order to maintain the required concentration of the drug.

3. Complete the course completely

Premature termination of treatment contributes to the survival of resistant bacteria.

4. The inadmissibility of using the “remnants” of the drug

Each disease requires an individual approach.

5. Compliance with compatibility with products and other drugs

Some antibiotics should not be taken with dairy products, juices, or antacids (as detailed in the instructions).

Side effects of antibiotics

Antibiotics can cause a number of adverse reactions:

- dysbiosis, digestive disorders;
- allergic reactions;
- toxic effects on the liver or kidneys (in some groups);
- hearing impairment (in rare drugs, for example, aminoglycosides — only according to indications);

Fungal complications, as the microflora becomes vulnerable.

Side effects are more likely to occur with improper or excessive use.

Antibiotic resistance as a silent global threat.

Antibiotic resistance is the ability of bacteria to survive and multiply despite the effects of antibiotics. They “learn” to resist drugs through mutations and the exchange of resistance genes.

Why it's dangerous:

1. Common infections become difficult to treat.
2. Surgeries and traumatic interventions become risky.
3. There are “superbugs” that are resistant to all known drugs.
4. Mortality from previously controlled diseases is increasing.

WHO calls antibiotic resistance one of the main threats of the 21st century. The problem is aggravated by self-medication, improper use of drugs and their uncontrolled use in veterinary medicine.

How to slow down the development of resistance:

- rational use of antibiotics;

- Strict medical treatment standards;
- Control over the use of antibiotics in agriculture;
- Raising public awareness;
- Development of new classes of antibacterial drugs.

Conclusion:

Antibiotics are essential and highly effective drugs to fight bacterial infections. However, their strength is also a weakness: any misuse leads to a decrease in effectiveness and an increase in antibiotic resistance. Compliance with admission rules, improving the medical literacy of the population and strict medical prescribing are key measures to preserve the effectiveness of antibiotics in the future. Antibiotic resistance is already a "silent global threat" that requires attention from both specialists and society as a whole.

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