

THE STUDY OF MICROORGANISMS MORPHOLOGICAL FEATURES ON PERMANENT PREPARATIONS

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Introduction. Research of the microorganisms tinctorial properties and morphological characteristics is the first stage of their identification. For this purpose simple, complex, and differential smear preparations staining techniques followed by light microscopy are used.

Accurate identification of microorganisms is important when working with bacteria and fungi, which are producers in biotechnological production, are used in environmental bioremediation and in environmental monitoring, agriculture, energetics and also have medical value.

Aim. The aim of our work is the creation of a bacteria and fungi several species permanent smear preparations collection, which are the objects of study in the laboratory of National University of Pharmacy Department of Biotechnology.

Materials and methods. We studied the species of microorganisms *Escherichia coli*, *Klebsiella pneumoniae*, *Bacillus subtilis*, *Staphylococcus aureus*, , *Corynebacterium pseudodiphtheriticum*, *Mycobacterium bovis* BCG, *Candida albicans*.

We used the following methods – staining by methylene blue solution; Gram staining; Ziehl - Nielsen staining; bacteria inclusions staining by Raskina; capsules staining by Burri; bacterial spores staining by Peshkov; nuclear elements staining by Romanovsky.

Smears were made according to traditional methods.

To prepare permanent preparations use ready smears made from pure microorganisms cultures. Drop of polystyrene dissolved in xylene was placed over the swab and then was covered with a clean cover glass.

After polystyrene solidification the microscopy of permanent smear preparations was carried out.

Prepared permanent preparations were stored in the packages of dark paper.

Results and discussion. The genus *Escherichia* are rod-shaped, Gram-negative bacteria. *Escherichia coli* is a member of the humans and animals gastrointestinal tract microflora. Several strains which are effective probiotic that reduce inflammation in the digestive tract diseases have been derived. They are the components of medical products such as Hylak forte, Bincolum, Colibacterin and others. Some strains can cause food poisoning in humans.

The genus *Klebsiella* are straight Gram-negative bacilli. The genus of opportunistic bacteria belonging to the Enterobacteriaceae family. They form capsules that protect cells from damage and drying. Some species cause pneumonia, urogenital infections, conjunctivitis, meningitis, sepsis, intestinal infections.

The genus *Bacillus* are gram-positive, spore-forming bacillus. They can tolerate high or low temperatures and are resistant to high or low pH values. They are opportunistic bacteria that can cause food poisoning. They are used for enzymes, antibiotics, biological products of high purity, including odor enhancers and food additives production.

The genus *Staphylococcus* are coccoid Gram-positive bacteria. May cause skin disease - furuncles, acne, impetigo; and lethal diseases - pneumonia, sepsis, toxic shock.

Corynebacterium is a genus of gram-positive rod-shaped bacteria. They do not form spores and capsules. In smears their cells are located in characteristic groups, chains, a stockade. In recent years the different *Corynebacterium* species value in human and animal pathology significantly increased. They are isolated in pneumonia, endocarditis, septic arthritis, diseases of the genitourinary tract. Some species can infect animals that can serve as a source of human infection. Some *Corynebacterium* species used in biotechnology.

Mycobacterium is a genus from Mycobacteriaceae family of actinomycetes. They are Gram-positive rod-shaped bacteria, bacterial spores and capsules do not form, are acid resistant. Most species are saprophytes and opportunistic pathogens. Such species as *Mycobacterium tuberculosis*, *Mycobacterium bovis*, *Mycobacterium leprae* are widely known as the causative agents of dangerous human and animal diseases.

The genus *Candida* are yeast eukaryotic microorganisms, the etiological factors of candidiasis. The disease is caused not only by the presence of *Candida* but by their reproduction in large quantities or more ingress pathogenic fungus strains.

Conclusions. The microorganisms permanent smear preparations collection, which are the objects of biotechnological use, are important in medicine, veterinary medicine, agriculture and other industries, which students study on disciplines such as microbiology, general biotechnology, environmental biotechnology, fundamentals biochemical engineering and other has been collected in the Department of Biotechnology of National University of Pharmacy. Our students can use his collection in the course of scientific works. The collection will be constantly replenished with new preparations of actual microbial strains, the study of which will contribute to the deepening of knowledge and skills of future biotechnologists.