МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ

М А Т Е Р І А Л И

106-ї підсумкової науково-практичної конференції
з міжнародною участю
професорсько-викладацького колективу
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ
03, 05, 10 лютого 2025 року

Конференція внесена до Реєстру заходів безперервного професійного розвитку, які проводитимуться у 2025 році №1005249

Чернівці – 2025

УДК 61(063)
М 34

Матеріали підсумкової 106-ї науково-практичної конференції з міжнародною участю професорсько-викладацького колективу Буковинського державного медичного університету (м. Чернівці, 03, 05, 10 лютого 2025 р.) – Чернівці: Медуніверситет, 2025. – 450 с. іл.

У збірнику представлені матеріали 106-ї науково-практичної конференції з міжнародною участю професорсько-викладацького колективу Буковинського державного медичного університету (м. Чернівці, 03, 05, 10 лютого 2025 р.) зі стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

Загальна редакція: професор Геруш І.В., професорка Годованець О.І., професор Безрук В.В.

Наукові рецензенти:
професор Батіг В.М.
професор Білоокий В.В.
професор Булик Р.Є.
професор Давиденко І.С.
професор Дейнека С.Є.
професорка Денисенко О.І.
професор Заморський І.І.
професорка Колоскова О.К.
професорка Кравченко О.В.
професорка Пашковська Н.В.
професорка Ткачук С.С.
професорка Тодоріко Л.Д.
професорка Хухліна О.С.
професор Чорноус В.О.

ISBN 978-617-519-135-4

Gavryliuk O.I.

INVESTIGATION OF MICROORGANISMS AND THEIR RESISTANCE IN MICROBIOLOGY

Department of Microbiology, Virology and Immunology
Bukovinian State Medical University

Introduction. In microbiology, bacteria are single-celled microorganisms that can be found almost everywhere on Earth. They can be both harmful and beneficial to human health. Viruses, on the other hand, are tiny infectious agents that can only replicate inside the cells of living organisms. They can cause a variety of diseases in humans, animals, and plants.

The aim of the study. In microbiology, the investigation of bacteria is crucial for several reasons. Bacteria play a significant role in various ecosystems, including the human body, where they can have both positive and negative effects on our health. By studying bacteria, scientists can better understand their behavior, growth patterns, and interactions with other organisms. Investigating bacteria also helps in the development of new antibiotics and other medical treatments to combat bacterial infections. Additionally, studying bacteria is important for food safety and environmental conservation, as certain bacteria can be harmful if not properly monitored and controlled.

Material and methods. The investigation of bacteria in microbiology is essential for advancing our knowledge of microbial life, improving public health, and ensuring the safety of our environment and food supply.

In microbiology, laboratory diagnosis of bacteria involves various techniques to identify and characterize bacterial species. Some common methods include:

1. Gram staining: This technique helps to differentiate bacteria into Gram-positive and Gram-negative groups based on their cell wall characteristics.

2. Culture and colony morphology: Bacteria are grown on specific agar plates under controlled conditions, and their colony morphology (size, shape, color, texture) is observed.

3. Biochemical tests: These tests assess the metabolic reactions of bacteria, such as sugar fermentation, gas production, and enzyme activity.

4. Molecular techniques: Polymerase chain reaction (PCR) and DNA sequencing can be used to identify bacterial species based on their genetic material.

5. Antibiotic susceptibility testing: This helps determine which antibiotics are effective against a particular bacterial strain.

Results. Overall, a combination of these techniques is used in the laboratory diagnosis of bacteria to accurately identify and characterize bacterial species for clinical or research purposes.

In microbiology, resistance in bacteria and viruses refers to their ability to withstand the effects of antimicrobial drugs or other treatments designed to kill or inhibit their growth. This can occur through various mechanisms such as genetic mutations, acquisition of resistance genes from other organisms, or changes in their metabolic processes.

Bacteria develop resistance to antibiotics through processes like mutation, gene transfer, or drug efflux pumps that can expel the antibiotic from the bacterial cell before it can do its job. On the other hand, viruses can develop resistance to antiviral drugs through mutations in their genomes that allow them to evade the drug's mechanism of action.

Conclusions. The rise of antimicrobial resistance poses a significant challenge in healthcare as it limits the effectiveness of antibiotics and antiviral drugs, leading to harder-to-treat infections and increased healthcare costs. To combat this issue, it is essential to promote responsible antibiotic use, develop new drugs or treatment strategies, and implement infection control measures to prevent the spread of resistant strains.