

**SYLLABUS OF PRACTICALS FROM MEDICAL MICROBIOLOGY
FOR STUDENTS OF DENTISTRY, THE 2ND YEAR,
SUMMER SEMESTER, ACADEMIC YEAR 2023/2024**

Practical No. 1

22.2.-23.2.2024

Introduction to practicals, laboratory of clinical microbiology, general principles of microbiological diagnostics and specimen handling.

Setup and instructions for practicals. Safety rules for the work and first aid in laboratory of clinical microbiology. Facilities and equipment of laboratory of clinical microbiology. Disinfection and sterilization in dentistry and methods of their control.

Basic algorithm of direct and indirect microbiological diagnostics.

Collection and transport of clinical material for microbiological diagnostics with an emphasis on the dental patient.

Practical No. 2

29.2.-1.3.2024

Rapid non-culture microbiological diagnostics.

Microscopic examination of specimens (wet mount preparation, fixed preparation, monochrome staining, diagnostic staining). Information obtained from microscopic examination. The importance of microscopic examination of clinical specimens for diagnostics and therapy of dental patient. Detection of genome of infectious agents in clinical specimens.

Practical No. 3

7.3.-8.3.2024

Examination of clinical specimens by cultivation and identification of isolated bacteria.

Basic principles of diagnostics by cultivation in laboratories of clinical microbiology. Cultivation media: liquid, semi-solid and solid cultivation media; universal, enriched, selective and diagnostic cultivation media. Conditions of cultivation of bacteria: aerobic, anaerobic and microaerophilic cultivation; cultivation under elevated CO₂ tension.

Evaluation of cultivation results and information obtained from cultivation. Non-cultivable bacteria on laboratory media.

Identification of bacteria by microscopy and biochemical tests.

The use of mass spectrometry (MALDI-TOF MS) in identification of microorganisms.

Identification of microorganisms using genome analysis (PCR, gene probes, sequencing).

Practical No. 4

14.3.-15.3.2024

Antimicrobial agents.

Susceptibility testing of bacteria to antibacterial drugs: qualitative methods (disk diffusion method) and quantitative methods (determination of MIC by dilution methods and E-test).

Detection of resistance mechanisms by phenotypic methods. Detection of genetic determinants of bacterial resistance to antibacterial agents.

Monitoring of antibiotic levels in body fluids of the patient.

Practical No. 5

21.3.-22.3.2024

Direct and indirect serological diagnostics of microbial infections.

Detection of antigens of infectious agents in clinical specimens by immunochromatographic test and latex agglutination test. Detection of antigens by reverse slide agglutination (serotyping).

Collection of specimens for antibody detection.

Detection of antibodies against causative agents of infectious diseases by immunochemical methods (ELISA).

- Practical No. 6** **4.4. -5.4.2024**
Viral and fungal infections.
Basics of microbiological diagnostics of viral and fungal infections.
Microbiological diagnostics of viral and fungal infections of the oral cavity and systemic infections with manifestations in the oral cavity.
- Practical No. 7** **11.4.-12.4.2024**
Microbiological diagnostics of infections of selected organ systems.
Basic algorithms of microbiological diagnostics of respiratory tract, urogenital tract, gastrointestinal tract and skin infections.
TEST I.
- Practical No. 8** **18.4.-19.4.2024**
Microbiota of the oral cavity.
Characterization of microbiota of the oral cavity by methods of clinical microbiology: microscopy and cultivation, detection of microbial genome in analysis of dental plaque microbiota. Visualization of dental plaque. Microbiological methods for risk estimation of cariogenic effect of oral microbiota.
- Practical No. 9** **25.4.-26.4.2024**
Gingivitis, periodontal disease, bacterial infections in oral cavity.
Microbiological diagnostics of gingivitis and periodontal disease.
Microbiological diagnostics of bacterial infections with manifestations in the oral cavity.
- Practical No. 10** **2.5.-3.5.2024**
Infections of areas connected with oral cavity.
Microbiological diagnostics of soft tissue infections, infections of jaw bones and paranasal sinuses, which are related to the infectious process in the oral cavity.
- Practical No. 11** **9.5.-10.5.2024**
Severe infections of odontogenic origin.
Microbiological diagnostics of systemic infections of odontogenic etiology.
Microbiological diagnostics of endocarditis, sepsis and CNS infections of odontogenic etiology.
- Practical No. 12** **16.5.-17.5.2024**
Infections connected to treatment in a medical facility.
Microbiological diagnostics of infections acquired in dental office.
Microbiological diagnostics of nosocomial infections after head and neck surgery.
TEST II.