

UNIVERSITY OF BELGRADE
FACULTY OF MEDICINE
PhD STUDIES

NAME OF THE MODULE: MEDICAL PHARMACOLOGY

CONTENT OF THE STUDY PROGRAM: The program consists of three compulsory and nine elective subjects. The content of the compulsory subject Pharmacodynamics introduces students to the mechanisms of drug action, experimental models, and techniques in pharmacodynamic research, studying drugs that modulate, activate, or inhibit various types of receptors, ion channels, active transporters, or enzymes, as well as studying the relationship between the structure and function of drugs. The content of the compulsory subject Pharmacokinetics and Adverse Drug Interactions consists of thematic units dedicated to the physiological basis and factors of variability of the ADME process, spatial and nonspatial PK data analysis, biological availability and bioequivalence of drugs, determination of drug dosage regimens, population and translational pharmacokinetics of drugs in special population groups, as well as studying toxicokinetics. Within the compulsory subject Special Clinical Pharmacology, students will become familiar with the biological basis for choosing optimal therapy for various cardiovascular, neuropsychiatric, endocrinological, and infectious diseases, aiming for their rational use, i.e., evidence-based application, which means effective, safe, and economically justified. There will be discussions on the effects of drugs on biochemical markers of ischemic-reperfusion damage as well as the role of redox signaling in directing intracellular responses. Students will also be introduced to the development of drugs and biocides based on active principles of essential plant oils for use in both human and veterinary medicine. They will approach the concept of personalized medicine and clinical pharmacogenetics, i.e., selecting the right drug for the right patient. Special attention will be paid to pharmacogenetics in hematology and oncology as well as the problem of resistance to antiplatelet drugs. Additionally, elective subjects in this module focus on laboratory techniques in scientific research as well as specific areas such as pharmacogenetics, research ethics, anesthesia and analgesia, neuropsychopharmacology, and pediatric pharmacology. Three elective subjects are dedicated to the cardiovascular system – cardiovascular pharmacology, drugs in the regulation of smooth muscle and endothelial tone, and neurogenic control of cardiovascular function.

ADMISSION REQUIREMENTS: Special: Individuals with completed integrated academic studies in medical sciences lasting 6 years (360 ECTS) OR individuals with completed academic studies in biological or medical orientation who have achieved at least 300 ECTS in previous study levels. General: Individuals who have achieved an average grade of 8.00 or higher in all previous study levels; English language proficiency to the level of communication and following scientific literature; appropriate computer skills; desirable recommendations related to involvement in scientific research.

MEMBERS OF THE ADVISORY BOARD: Prof. Dr. Ljiljana Gojković-Bukarica, Prof. Dr. Zoran Todorović, Prof. Dr. Dragan Obradović, Prof. Dr. Nina Japunjić-Žigon, Prof. Dr. Miroslav Radenković, Prof. Dr. Sonja Vučković, Prof. Dr. Milica Bajčetić. Secretary of the module: Assoc. Prof. Dr. Dragana Srebro.

OBLIGATORY COURSES: Methodology of Scientific Research, Research Ethics, Informatics, Statistics for Researchers in Biomedical Sciences (basic course), Pharmacodynamics, Pharmacokinetics and Adverse Drug Interactions, Special Clinical Pharmacology.

ELECTIVE COURSES: Ethics of Research on Animals and Humans, Laboratory Techniques in Pharmacology, Cardiovascular Pharmacology, Drugs in the Regulation of Smooth Muscle and Endothelium, Neurogenic Control of the Cardiovascular System, Anesthesia and Analgesia, Neuropsychopharmacology, Pediatric Pharmacology, Pharmacogenetics.