UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Pharmacology

2122-5-H4102D032-H4102D134M

Aims

To learn the following aspects of the drugs acting on the main diseases of the peripheral and central nervous system: (1) cellular and molecular mechanisms of action; (2) pharmacokinetic properties; (3) therapeutic, side, and toxic effects; (4) drug-drug interactions; (5) pharmacogenetics determinants of drug responses; (5) the peculiarities of the pharmacological treatment of special subjects: pregnant and lactating women, elders, children; (6) the neurobiological basis of drug abuse and dependence.

Contents

(2) Cannabinoids

(3) Drugs and substances of abuse

(4) Local and general anesthetics

Neuropsichopharmacology in special populations: pregnant and lactating women, elders, children.

Neurobiological basis of drug abuse and dependence.

Detailed program

Pain and analgesia in the CNS: overview of the peripheral and central nervous system mechanisms of pain and analgesia; nociceptive and neuropathic pain; modulatory mechanisms in nociceptive pathways, neurotransmitters involved in nociception, chemical signalling and the pharmacology of drugs such as opioids and cannabinoids which modulate pain.

Drug Addiction and dependence: overview of the effects of chronic drug use on the CNS and the adaptive responses that underlay withdrawal and dependence; key concepts include drug withdrawal and dependence, synapses and cell signalling and the modulation of neurotransmitters and biochemical pathways contributing to drug addiction; drug treatments of drug addiction.

Local and general anaesthetics: overview of the different types of local and general anaesthetic agents; mechanisms of action of a number of different commonly used anaesthetics; central nervous system effects; sites of action; adverse effects; effects on axonal and synaptic transmission.

Pharmacotherapy of pregnant and lactating women, elders, and children: pharmacodynamic and pharmacokinetic features.

Prerequisites

Previous knowledge of the basic principles of chemistry, biochemistry, and of anatomy, physiology and pathology of peripheral and central nervous systems is required.

Teaching form

The teaching will be performed in attendance, except for ministerial changes due to the COVID pandemic situation. Formal lectures and discussions of clinical cases will be utilized. The language is English.

Textbook and teaching resource

All slides and recordings of the lectures will be accessible through the e-learning platform.

Textbooks:

Goodman and Gilman's The pharmacological basis of therapeutics, 13th ed. (2018) McGraw-Hill Education.

Stahl's Essential Psychopharmacology, 7th ed (2021) Cambridge Medicine.

Suggested websites:

- www.ncbi.nlm.nih.gov/pubmed

- https://acnp.org/digital-library/neuropsychopharmacology-5th-generation-progress/

Scientific articles indicated by the teacher.

Semester

First semester.

Assessment method

The final evaluation is aimed to assess whether students have acquired the exact terminology of the subject, the application of the critical reasoning developed in class and knowledge of the notions studied on the most important classes of drugs currently available in the field of neuropsychopharmacology. It will be performed in attendance except for ministerial changes due to the COVID pandemic situation. It will consist of a written test with multiple choice quizzes and open-ended questions (solution of pharmacological questions related to clinical cases; mathematical calculations of pharmacological equations).

An oral supplement will eventually be possible on specific request by the student. It will consist in the discussion of topics of the written test.

Office hours

On appointment.