UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Pharmacology

2122-5-H4102D032-H4102D125M

Aims

To learn the following aspects related to the drugs employed for the treatment of the main diseases of the peripheral and central nervous systems: (1) cellular and molecular mechanisms underlying the therapeutic and adverse effects; (2) pharmacokinetic properties; (3) therapeutic, side effects, toxic effects (4) drug interactions; (5) pharmacogenetic determinants of drugs' responses.

Contents

Drugs acting on the peripheral somatic and autonomic nervous systems.

Drugs for the treatment of the main neurological diseases:

(1) Drugs for the treatment of neurodegenerative diseases

(2) Anti-seizure drugs

(3) Drugs for headache and migraine

Drugs for the treatment of the main psychiatric diseases:

(1) Anxiolytics and hypnotics

(2) Antidepressants and mood stabilizers

(3) Antipsychotics

Detailed program

1. Neurotransmitter and receptor systems in the peripheral and central nervous systems

Serotonin / Noradrenaline / Dopamine / Acetylcholine / GABA / Glutamate: synthesis and metabolism; main pathways in the CNS; receptor types; agonists and antagonists; general overview of therapeutic uses of drugs affecting neurotransmitter systems.

2. Neurological and psychiatric disorders – and drugs used to treat them

Parkinson's and Alzheimer diseases: mechanisms of action, efficacy and side-effects of commonly used pharmacological treatments.

Epilepsy: mechanisms of action, efficacy and side-effects of commonly used antiepileptics.

Cephalea and migraine: mechanisms of action, efficacy and side-effects of drugs used for prevention and treatment.

Anxiety and insomnia: mechanisms of action, efficacy and side-effects of anxiolytics and hypnotics.

Major depression and bipolar disorder: mechanisms of action, efficacy and side-effects of antidepressants and mood stabilizers.

Psychoses and schizophrenia: mechanisms of action, efficacy and side-effects of antipsychotic drugs.

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.

Websites:

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

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

Scientific articles and reviews.

Semester

First (fall) 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.