UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Basic Pharmacology

1920-2-H4102D012

Aims

The objective of this course is to provide the general principles of pharmacology. Topics including pharmacokinetics and pharmacodynamics will be discussed. The course content emphasizes drug mechanisms, drug development and post-marketing surveillance. An introductory assessment of the drugs acting on the peripheral nervous system will be proposed.

Contents

The course will examine the general principles underlying the destiny of drugs within the organism and the mechanisms responsible of their therapeutic and toxic effects. In addition, the preclinical and clinical processes of drug research and development, the post-marketing surveillance, drug patenting and access will be discussed. Finally, the drugs acting on the peripheral nervous system will be introduced.

Detailed program

INTRODUCTION: Drug definition, Brief history of pharmacology, Routes of administration - PHARMACOKINETICS: Absorption, Bioavailability, Distribution, Body compartments, Volume of distribution, Phase 1 and 2 reactions, First-pass metabolism, Excretion, First- and zero-order kinetics, Therapeutic window – TARGETS OF DRUG ACTION: Common drug mechanisms, Receptors, enzymes, ion channels, and transporters, New drug mechanisms, Protein-based, gene-based, and cell-based therapies – PHARMACODYNAMICS: Receptor and ligand binding, Dose response relationships, Individual variation, Pharmacogenetics - DRUG TOXICITY: Toxic and lethal dosing, Mechanisms of drug toxicity, Drug interactions, Adverse drug reactions, Drug abuse and dependence - DRUG DISCOVERY AND DEVELOPMENT: Drug discovery and design, Preclinical drug development, Clinical drug development, Post-marketing surveillance, Chemical and biological drugs, Generics and biosimilars – PHARMACOECONOMICS: Drug patents and access - DRUGS ACTING ON PERIPHERAL

NERVOUS SYSTEM: drugs acting on somatic and autonomic nervous systems.

Prerequisites

Knowledge of human anatomy, physiology, pathology, chemistry, biochemistry.

Teaching form

Formal lectures employing interactive activities with problem solving and clinical case discussions.

Textbook and teaching resource

(1) Goodman & Gilman's: The Pharmacological Basis of Therapeutics, Thirteenth Edition, McGraw Hill

(2) Goodman & Gilman's Manual of Pharmacology and Therapeutics, Second Edition, McGraw Hill

Semester

First semester.

Assessment method

Written test with closed questions (true/false, multiple-choice quizzes) and open questions about pharmacological clinical cases.

Office hours

Upon appointment.