UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Pharmacology of Chemotherapic

2627-1-F0602Q056

Aims

Due to the medical need in the control of bacterial and viral infections as well as of tumors, the Pharmacology of Chemotherapeutics is a discipline in continuous evolution. Through this course, students acquire knowledge concerning the mechanism of action of the chemotherapeutics used actually. Furthermore, the most innovative therapeutic strategies, based on advanced technologies, are presented. In particular: a) Knowledge and understanding: at the end of the course the student will have acquired the knowledge about the mechanism of action of Chemotherapeutics and the ability to properly understand the relationship between the molecular mechanism and therapeutic effect; b) Applying knowledge and understanding: the student will be able to propose alternatives to the current pharmacological strategies, such as nwe formulations or new drug delivery, applied in order to bypass actual problems; c) Making judgements: the student will be able to propose alternatives to the current pharmacological strategies on the basis of the knowledges acquired during the course; d) Communication skills: at the end of the course the student will have acquired adequate pharmacological language throught which he'll be able to describe the pharmacology of Chemotherapeutics; e) Learning skills: the student will have expertise useful to be applied in other pharmacological studies or in research project.

Contents

The course will describe the chemotherapy of antibacterial, antiviral and antineoplastic drugs and innovative strategies against cancer such as anti-angiogenic therapy, anticancer immunotherapy and gene therapy of cancer

Detailed program

1) Mechanism of action of antibacterial drugs (cell wall inhibitors, inhibitors of protein synthesis, metabolic inhibitors of folic acid synthesis). 2) Mechanism of action of antiviral drugs (entry inhibitors, viral replication inhibitors). 3)

Mechanism of action of antineoplastic drugs (antimitotic drugs, alkylating agents, DNA synthesis inhibitors). The toxicity of chemotherapeutics and the acquisition of resistance are described with particular regard to the molecular mechanism underlying the multidrug resistance. Finally, the most innovative strategies against cancer are proposed such as antiangiogenic drugs, anticancer monoclonal antibodies and cancer gen therapy (i.e. suicide gene therapy and p53 replacement).

Prerequisites

Background: molecular and cellular biology and microbiology.
Specific prerequisites: none.

Teaching form

Lectures including the analysis and discussion of scientific articles. The course comprises 18 two-hour lectures and three two-hour sessions dedicated to e-activities (e.g., reading and discussing review articles, preparing diagrams on antibacterial resistance, self-assessment quizzes, etc.).

Teaching language: italian

Textbook and teaching resource

Slides showed at lesson, reviews e research articles are available on e-learning platform

Semester

Firs tsemester

Assessment method

Oral examination.
The questions aim to assess the basic knowledge acquired and to evaluate the understanding of the concepts, the ability to connect the various topics covered, and the ability to address a pharmacological issue.

As for the exam, it can be taken entirely in the form of an oral interview, or alternatively through coursework assigned during the semester. These assignments will be carried out in small groups (maximum of three people) and will account for 65% of the final grade. On the day of the oral exam, the assessment will be completed with an individual discussion of a scientific article chosen from a selection I will provide (this part will account for 35% of the final grade).

Office hours

Contact: on demand, upon request by mail to lecturer

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING