28420 - Pharmacology and Drug Therapy

Información del Plan Docente

Academic Year	2016/17
Academic center	105 - Facultad de Veterinaria
Degree	451 - Degree in Veterinary Science
ECTS	9.0
Course	3
Period	Annual
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The course is structured in two general topics: (a) Pharmacy and Pharmacology and (b) Pharmacotherapy, developed according to the following criteria:

a. 90 classroom hours:

60 hours of lectures.
16 hours of practical laboratory classes.

5 hours of seminars.
7 hours of special therapeutic practices.
2 hours of supervised work.

b. 135 hours of independent study time:

100 hours of study regarding lectures.
10 hours spent for the section on laboratory practice
17 hours spent for the therapeutic supervised practice.
4 hours devoted to evaluation.

Lectures are taught to be held in the classroom with students divided in two groups.
Four seminars will be organized (one hour for session) and will be based on clinical cases.

The laboratory work will consist of four sessions: (a) routes of administration and dose calculation, (b) pharmacokinetic and dosage forms, (c) pharmacodynamics I and (d) Pharmacodynamics II. They will be conducted in the laboratory of Pharmacology, in groups programmed by the center, within the first semester of the academic year. Initially, an explanation of the session will be done. Subsequently, students will practice under the supervision of teachers. Students will be provided with noteworks and specific materials for the practice. Laboratory dressing and the use of personal protective measures are required by the University.
Special therapeutic practices will be carried out with the approval of the Ethical Committee for Animal Welfare. They will be held throughout the second quarter and will include tutorials in groups of 6 students and the final submission of a written report. The appropriate clinical clothing (sanitary dress) is required.

5.2.Learning activities

Lectures, 60 hours
Laboratory practical classes, 16 hours
Seminars, 5 hours
Special therapeutic practices, 7 hours.
Supervised work, 2 hours.

5.3.Program

The contents of each of these thematic blocks are presented in the program is detailed below:

Program

Lecture topics:

1- Introduction to Pharmacology. The concept of Pharmacology, basic principles and its relation with other disciplines.

2- Drug transport and passage across membranes. Transport through channels, active transport, facilitated diffusion, absorption, aqueous diffusion of water-soluble drugs.

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3- Pharmacokinetics I. Absorption and distribution. Routes of administration. The concept of distribution. Binding to plasma and serum proteins. The blood-brain barrier and the placenta. Factors affecting drug distribution. Volume of distribution.

4- Pharmacokinetics II. Drug metabolism. Pharmacological significance of metabolism. Site of biotransformation. Metabolic pathways: synthetic and non-synthetic. Factors affecting drug metabolism: physiological, pathological and pharmacological factors.

5- Pharmacokinetics III. Drug excretion. General mechanisms of excretion and factors affecting drug excretion. Renal excretion. Liver-biliary excretion. Other excretion routes.

6- Pharmacokinetics IV. Compartmental analysis model. Concepts and variables.

7- Mechanism of drug action. Pharmacodynamics concepts. Drug receptors. Drug-receptor relationship. Concepts: Affinity and intrinsic activity. Dose-response curves. Agonist and Antagonist.

8- Drug interactions. Concepts and modifications. Synergy and antagonism. Pharmacodynamic and pharmacokinetic interactions.

9- Toxicitiy and drug side effects.

10- Gene therapy.

11- Pharmacy. Type of drugs, dosage forms. Bioavailability and bioequivalence.

PHARMACOLOGY AND CHEMOTHERAPY OF MICROBIAL DISEASES AND PARASITIC INFECTIONS.

12- Introduction. General concepts. Classification and mechanism of action. Bacterial resistance to antimicrobial agents. Selection of an antimicrobial agent and therapy with combined antimicrobial agents. Toxicity and undesirable side effects. Chemotherapy: safe use of drugs in veterinary.

13- Antiseptics and disinfectants. General concepts. Classification. Pharmacological characteristic of the most commonly used antiseptics: alcohols, phenols, detergents, oxidizing agents, chlorhexidine.

NOTE: In each of the following lectures (14-21), will be included: Chemical structure, classification, mechanism of action, spectrum of activity, resistance, pharmacokinetics, toxicity and side effects, interactions and indications.

14- Sulfonamides and diaminopyridines

15- Antimicrobial drugs affecting bacterial cell wall. I. Beta-lactams antibiotics: penicillins, cephalosporins, monobactam, carbapenems, beta-lactamase inhibitors. II.

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16- Antimicrobial drugs that affect the bacterial protein synthesis. I. Aminoglycosides. II Tetracyclines. III. Phenicols. IV. Macrolides, V. Lincosamides.

17- Antimicrobial drugs that inhibit the nucleic acid synthesis. I. Quinolones. II. Nitrofurans. III. Nitroimidazoles., IV Rifamycins.

18- Other antibacterial drugs. Polymyxins, Novobiocin.

19- Antifungal drugs. I. Topical use. II. Systemic use.

20- Antihelmintic drugs. I. Drugs against nematodes. II. Drugs against cestodes. III. Drugs against trematodes.

21- Anticoccidial drugs

PHARMACOLOGY OF THE NERVOUS SYSTEM

22- Autonomic Nervous System. Neurotransmission. Drugs acting on the autonomic nervous system.

23- Adrenergic Pharmacology: sympathomimetic and sympatholytic drugs.

24- Cholinergic Pharmacology.

25- Autacoids: Histamine, antihistamines. Other autacoids.

26- Central Nervous System stimulant drugs: analeptics.

27- Non-narcotic analgesic drugs.

28- Narcotic analgesic drugs.

29- Local anesthetic drugs.

30- Neuroleptic drugs.

31- Inhaled anesthetic drugs.

32 - General anesthetic drugs: barbiturates, dissociative drugs, steroids drugs and other drugs with application in general anesthesia.

PHARMACOLOGY OF ORGANS AND SYSTEMS

33 - Cardiac pharmacology.
34 - Vasodilator and vasoconstrictor drugs.
35- Hemostatic and anticoagulant drugs.

36- Fluid Therapy.

37- Diuretic drugs.

38- Airway pharmacology: antitussive, mucolytic and bronchodilator drugs.

39- Gastric pharmacology.

40- Intestinal pharmacology: laxative and purgative drugs. Protectors. Adsorbents, Astringents. Drugs modulating intestinal activity.

Hormone pharmacology

41 - Drugs acting on the reproductive system: steroid and protein hormones. Gonadotropins. Uterine muscle relaxant and oxytocics drugs.

42- Hormones affecting metabolism: Thyroid, Parathyroid, insulin and pancreatic hormones.
43- Corticosteroids therapy.

PRACTICAL PROGRAM

A. Laboratory
10 students per group (groups organized by the center):
1. Routes of administration and dose calculation.
2. Pharmacokinetics and dosage forms.
4. Pharmacodynamics. In vitro methods I.
5. Pharmacodynamics. In vitro methods II.
B. Special therapeutic practices.
Laboratory hours, personalized tutoring and supervised work.
C. Seminars
1. Hormone Therapy.
2. Cardiovascular Therapy.
3. Fluid Therapy.
4. Pain, sedation and tranquilization.

5.4.Planning and scheduling

Calendar of meetings attendance and presentation of works: The dates and key points of the course are described in detail, along with the other subjects in the third course in the Degree of Veterinary Medicine at the website of the Faculty of Veterinary Medicine (http://veterinaria.unizar.es /gradoveterinaria/). This information will be updated at the beginning of

the academic year.

5.5.Bibliography and recomended resources

http://psfunizar7.unizar.es/br13/eBuscar.php?tipo=a