UCLouvain

wfarm1300

2019

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

4 credits	30.0 h + 30.0 h	Q1

Teacher(s)	Bindels Laure (compensates Delzenne Nathalie) ;Delzenne Nathalie ;Elens Laure ;
Language :	French
Place of the course	Bruxelles Woluwe
Prerequisites	Biochemistry and molecular biology, biology, physiology and pahtology, organic chemistry, microbiology. *The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	The course is divised in two parts. The first part deals with the different enzymatic systems that drive to metabolize exogenous molecules in the body (phases I and II). These processes allow to eliminate these compounds. The second part of the course presente several aspects of the phamacokinetics field, including the qualitative and quantitative description of the drug absorption, distribution and elimination processes.
Aims	At the end of this teaching unit, the student will be able: 1 - To precisely describe and implement the various components that drive the fate of a xenobiotic in the body (mainly a drug or an environmental toxic). - To use the acquired tools to predict the metabolic fate of a xenobiotic, using the rules seen in class. - To execute the kinetic computation formulations learned throughout the course to characterize, compare and discuss the drug pharmacokinetic profile from clinical data. - To appropriately interpret the obtained values and discuss the results using the acquired theoretical knowledge. - To precisely describe the fate of a xenobiotic whatever the administration way and to be able to select the best administrative way in a specific setting. - To collect, analyze, formulate critics, summarize and present clearly scientific information related to the metabolic and pharmacokinetic fate of a drug compound. - To discuss the consequences that the ADME process may have on a drug's therapeutic efficacy and/or toxicological side-effects (ADME stands for absorption, distribution, metabolization and excretion). - - - - *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Content	The course is divided in two parts. In the first part (Drug Metabolism) the biochemical pathways and reactions involved in drug metabolism are explained. The different phase I and phase II reactions are described from a chemical/biochemical standpoint. In addition, the various factors affecting the activity of the phase I and phase II drug metabolizing enzymes are highlighted by using practical examples. The therapeutic consequences of drug metabolism are illustrated. In the second part of the course (Pharmacokinetics) the basic principles and concepts underlying the processes of drug absorption, distribution and elimination (metabolism and excretion), i.e. the ADME pathway, are described in detail. In this section, Phase III transporter proteins and their role in pharmacokinetics (P Glycoprotein, MRP') are also detailed. In addition, quantitative pharmacokinetics and mathematical methods (e.g. trapezoidal rules) to calculate basic pharmacokinetic parameters such as bioavailability, clearance, volume of distribution, half-life etc, are developed. Much emphasis is placed on the correct interpretation of these pharmacokinetic parameters which is important for the rational use drugs in pharmacotherapy. Tutorials are organized to illustrate different aspects of the theoretical course. For Drug Metabolism the students (in groups of two) have to prepare a summary report on the metabolic fate of a particular drug substance in humans based on the information available in the scientific literature. For Pharmacokinetics the students have the possibility to learn the mathematical methods used to calculate pharmacokinetic parameters by solving a number of practical problems.
Bibliography	Les diapositives projetés et les articles scientifiques analysés lors des cours magistraux sont disponibles sur la plateforme Moodle UCL.

Faculty or entity in charge	FARM

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Pharmacy	FARM1BA	4	WMD1102 AND WMD1106 AND WFARM1221 AND WFARM1212 AND WFARM1213 AND WFARM1232	