UCL Université catholique de Louvain

WFARM1300

2015-2016

Pharmacocinétique et métabolisme des xénobiotiques

4.0 credits	30.0 h + 30.0 h	1q

Teacher(s) :	Delzenne Nathalie ; Elens Laure ;
Language :	Français
Place of the course	Bruxelles Woluwe
Prerequisites :	To follow this course the students should have a good basic knowledge of mathematics, chemistry, biochemistry, molecular biology, physiology, anatomy and 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 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.
Aims :	The objective of this course is to give the students the necessary information to understand the fate of a xenobiotic in the body and its consequences for the clinical efficacy and potential toxicity of therapeutic agents. *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".*
Evaluation methods :	Students are evaluated on their performance during the tutorials (drug metabolism report). Their theoretical knowledge of the course material is evaluated through a written exam.
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.
Other infos :	Powerpoint slides and scientific articles are available for the students to help them in assimilating the course material.
Faculty or entity in charge:	FARM

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Bachelor in Pharmacy	FARM1BA	4	WMD1102 **and** WMD1106 **and** WFARM1221 **and** WFARM1212 **and** WFARM1213 **and** WFARM1232	