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| 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 pathology, organic chemistry, microbiology. <i>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.</i> |
| Main themes | The course is divided into two parts. The first part of biochemistry consists in presenting to the students the different enzymatic systems which govern the metabolism of exogenous molecules in the organism (phases I and II) thus allowing their elimination. The second part of the course deals with pharmacokinetics in its different aspects, i.e. the qualitative and quantitative description of the processes of absorption, distribution and elimination of drugs. |
| Learning outcomes | At the end of this learning unit, the student is able to : <ul style="list-style-type: none"> - To describe precisely and implement the different components that govern the fate of a xenobiotic (mainly drug or environmental toxicant) in the body. - Use the tools acquired to predict the metabolic fate of a xenobiotic, by applying the rules seen in the course. - Apply the kinetic formulas learned in order to characterize/comparison/discuss the pharmacokinetic profile of drugs from clinical data - Interpret the values obtained and discuss the results appropriately using the theoretical knowledge acquired - Describe accurately the fate of an active substance by any route of administration and be able to discern which route should be preferred in relation to the problem at hand. - To be able to collect, analyse, critique, summarise and clearly present scientific information illustrating the metabolic and pharmacokinetic fate of a pharmaceutical compound. - Discuss the implications of the ADME process of a drug in terms of therapeutic efficacy and/or toxic potential (ADME, absorption, distribution, metabolism, excretion). |
| Evaluation methods | The assessment aims to measure the achievement of the learning outcomes targeted, via a written exam and the writing of a paper by groups of 2 to 3 students, all in French. The work is to be handed in on Moodle before the beginning of the session, on a date communicated to the students. The final grade is the weighted average of the metabolism, pharmacokinetics and assignment parts. In the final grade, the metabolism part is worth 6/20, the pharmacokinetics part is worth 10/20 and the assignment is worth 4/20. In a second presentation session, work with a mark < 12/20 must be improved and resubmitted. A mark of > or equal to 12/20 will be extended for that session. If the student is required to re-register for the course, he/she will have to submit a new piece of work. It is the student's responsibility to enquire about their grade and the need for resubmission. |
| Teaching methods | Audience lectures, tutorials, exercise sessions |
| Content | T 1. Metabolism of xenobiotics The course is structured in 4 chapters which mainly include the description of the enzymatic systems involved (enzymology, coenzyme, interaction with intermediary metabolism, establishment of general rules for the recognition of substrate functions). Specific examples are used to illustrate particular aspects, such as the toxicological implication of a reaction or the consequences for the establishment of dosage, the implication of particular metabolic or nutritional situations or the therapeutic and toxicological consequences of inter-individual differences. 2. Pharmacokinetics In this part of the course, the qualitative and quantitative aspects of the processes of absorption, distribution and elimination (metabolism and excretion), i.e. ADME, of drugs are developed. A development of the phase III processes and the role of the different proteins involved (MDR or ABC, MRP, P-glycoproteins.) is also part of the subject. This subject is essential to deal in later years with the application of pharmacokinetics in the rational use of drugs in patients, i.e. clinical pharmacokinetics. The appropriation of the concepts presented in the theoretical lectures is stimulated by tutorials, which consist of problem-based learning of the different parts of the course and by the preparation of an assignment in groups of 2 |

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| | to 3 students. In this assignment, the students analyse and present the metabolic fate of a therapeutic substance in the light of literature data. |
| Bibliography | Les diapositives projetés lors des cours magistraux et des séances d'exercices sont disponibles sur la plateforme Moodle UCL. The slides projected during the lectures and exercise sessions are available on the UCL Moodle platform. |
| Other infos | Participation in tutorials and exercise sessions is highly recommended to validate the unit as a significant part of the examination |
| Faculty or entity in charge | FARM |

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