UCL Faculté de médecine

MD

FARM2232 Isolement de produits naturels et analyse structurale

[30h+15h exercises]

Teacher(s): Jean-Louis Habib Jiwan, Joëlle Leclercq, Etienne Sonveaux
Language: french
Level: 2nd cycle course

Aims

At the end of this course, the students should be able to propose a method of extraction and purification of different classes of organic compounds from complex mixtures and determine the structure of simple organic molecules from spectroscopic data.

Main themes

- Extraction, fractionation and purification methods for compounds present in complex mixtures
- Mass spectrometry: ionisation techniques, analysis of ions and main fragmentation pathways
- Principles of nuclear magnetic resonance (NMR)
- Use of spectral data for structure determination of organic drugs

Content and teaching methods

The course is divided in 4 parts:
1. Extraction, purification and fractionation methods of organic molecules from complex mixtures: solid phase, supercritical fluid and liquid-liquid extractions, preparative chromatographies on different supports (silica, bounded or not, polymers, molecular sieves, affinity chromatography): practical aspects, advantages and draw-backs of the different methods. Students will receive notes and an ex cathedra course followed by discussions and questions-answers seminars.
2. Mass spectrometry: ionisation techniques (EI, FAB, CID, ESP, TSP, APCI,#), analytical methods (ion trap, quadrupolar, magnetic equipments) and main fragmentations
3. Essential principles of NMR allowing students to determine simple structures from 1H and 13C NMR spectra. 2D-NMR will also be presented.
4. Directed works-case study: structure determination from spectroscopic data.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Evaluation:
Students will have to determine the structure of a simple organic molecule from spectra, explain and comment a publication dealing with purification of a natural compound.
This last part will be prepared at home and presented orally.
A theoric exam will also be organised for the mass spectra part