

Faculty of Medicine



FARM2232 Insulation of natural products and analyzes structural

[30h+15h exercises]

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Language: French
Level: Second cycle

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 ^{13}C 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 theoretic exam will also be organised for the mass spectra part