

## Faculty of Medicine



### INTR2450 Experimental toxicology related to food and nutrition

[22.5h+15h exercises] 3 credits

**Teacher(s):** Pedro Buc Calderon, Nathalie Delzenne  
**Language:** French  
**Level:** Second cycle

#### Aims

1. To acquire basis in the experimental evaluation of toxicity (mechanisms involved in chemical toxicity, experimental models, legal aspects of toxicity assessment (for drugs and food-derived products) . 2. To be aware, through the critical analysis of scientific publications and available information on internet, of the recent progress in food toxicology (nutritional toxicology, nutrients/drug interactions, nutrition and pathologies, functional and novel foods, special diets, food supplements#).

#### Main themes

1. Cellular mechanisms of toxicity (metabolic activation; drug/nutrient/metabolites reactivity; cell death and proliferation#)
2. Evaluation of risk and legal aspects of toxicity testing.
3. Main risks associated to food and nutrition
4. Analysis of novel concepts in the evaluation of food safety; application to risks linked to drug-nutrients interactions, food supplements, novel food (including GMO), functional food.

#### Content and teaching methods

1. Introduction to concepts and definitions in general toxicology
2. Present methods in toxicological evaluation (including legal aspects)
3. Current knowledge in cellular toxicology (mechanisms of cell death/ proliferation; oxidative stress; reactivity and metabolism#)
4. Main risks associated to food and nutrition (nutritional composition, contaminants, additives, natural toxics, food conditioning and preservation, food processing, drug/nutrients interactions, allergy)
5. Toxicological evaluation of food supplements; novel food (including GMO)
6. Recent problems related to food/nutrition toxicology

Seminars : The students prepare and present the comparison of data recently published in scientific papers versus information largely diffused (press and internet) on specific problems related to food toxicology.

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

##### Pré-requis

Biochemistry ; Toxicology; Physiology ; Pathology ; Pharmacology (including pharmacokinetics) ; Organic and analytical chemistry ; Microbiology.

##### Evaluation

Evaluation of experimental knowledge during the period of practical exercise.

Written exam based on analysis of case reports.

##### Support

Notes including key figures, power point presentation, and key papers summarizing each chapter.

Ouvrages de référence ; sites internet et adresses d'organismes intéressants

Food, nutrition and the prevention of cancer : a global perspective World Cancer Research Fund & American Institute for Cancer Research, 1997

Documents édités par Ilsi (international life sciences institute Europe) ; ouvrage à consulter en PMNT : " Present Knowledge in Nutrition " eighth Edition (2001). Téléphone 02 771 00 14 ; email : info@ilsieurope.be ; site : <http://europe.ilsieurope.org>

" Handbook of food-drug interactions " Eds B.J. McCabe, E.H. Frankel, J.J. Wolfe. CRC press (2003)

**Programmes in which this activity is taught**

|                   |   |
|-------------------|---|
| <b>NUT2</b>       | Licence en sciences biomédicales (nutrition humaine)                                  |
| <b>SBIM3DS</b>    | Diplôme d'études spécialisées en sciences biomédicales                                |
| <b>SBIM3DS/TA</b> | Diplôme d'études spécialisées en sciences biomédicales<br>(Toxicologie analytique)    |
| <b>SBIM3DS/TC</b> | Diplôme d'études spécialisées en sciences biomédicales<br>(Toxicologie clinique)      |
| <b>SBIM3DS/TE</b> | Diplôme d'études spécialisées en sciences biomédicales<br>(toxicologie expérimentale) |

**Other credits in programs**

|                 |  |           |
|-----------------|--|-----------|
| <b>MD3DA/BI</b> | Diplôme d'études approfondies en sciences de la santé<br>(sciences biomédicales) | Mandatory |
| <b>NUT21</b>    | Première licence en sciences biomédicales (nutrition humaine)                    | Mandatory |