Curriculum Vitae

Claire DUFOUR

Ph.D. in Chemistry

Chemical Engineer (ESCIL-Lyon)

Born in Lyon (France) - 1966

Contact : INRA

Unit « Safety and Quality of Plant Products »

228 route de l'aérodrome, 84914 Avignon Cedex 9

Tél : (+33) 4 32 72 25 15 / email : claire.dufour@avignon.inra.fr

EDUCATION

2010 **Habilitation** in Food science-Food engineering from the University of Montpellier (France) (Habilitation à Diriger les Recherches)

1988-1993 **Ph.D. in Organic Chemistry** at The Ohio State University, Columbus, Ohio (USA)

- Thesis title : « *Novel Route to Di- and Triquinanes by Photocyclization Fragmentation of Norbornanes. Stereoselective Synthesis of Isocomene* » Ph.D. advisor : Prof. Viresh H. Rawal.

Development of a general method for fragmenting the norbornane skeleton to yield fused di- et tricyclopentanes. Synthesis of diversely functionalized di- and tricycles. Application to total synthesis of natural product Isocomène (15 steps).

- Other Project : Formation and cyclization of alkoxymethyl radicals and application to the synthsis of furan and pyran derivatives.
- Teaching assistant (3 years) in organic and analytical chemistries (undergraduate and master degrees).

1989 **Chemical Engineer** (School of Industrial Chemistry, ESCIL Lyon, now CPE Lyon)

RELEVANT CAREER EVENTS

Oct. 2000–on **Senior Research Scientist** at the joint INRA/University of Avignon Unit "Safety and Quality of Plant Products", Avignon.
Research activities focused on the physicochemical properties of dietary polyphenols in relation with their nutritional value:

- bioaccessibility of plant polyphenols in the gastrointestinal tract (in vitro static and dynamic digestion models, animal: minipig)

- inhibition of lipid oxidation by polyphenols in in vitro and in vivo digestion, in modeled plasma

- Antioxidant capacity of polyphenols in the DPPH test, ORAC test, though the study of lipid oxidation in SDS micelles of linoleic acid

- qualitative and quantitative analyses of polyphenols in plants (HPLC/MS, NMR)

- Binding between polyphenols and proteins (affinity constant determination, binding site location)

1998 – 2000 **Visiting scientist at the Laboratory of Polyphenols - University of Lyon**

- Interaction studies between serum albumin and flavonoids (binding site location and affinity constant by spectrofluorometry)
- Inhibition of lipid oxidation by flavonoids in SDS micelles of linoleic acid (flavonoids act as retardants by inhibiting initiation rather than propagation)
- Kinetic studies of mono- and bielectronic oxidations of quercetin derivatives.

1994 – 1998 **Research scientist at the INRA Unit « Science for enology », Montpellier**

- Interaction studies between aroma compounds and wine macromolecules (polysaccharides, polyphenols) using NMR, gas chromatography, or UV-vis spectroscopy.
- Immunenzymatic titration of pyrazines (hapten synthesis, conjugation to protein, antibody production, and Elisa Test)

1994 **Postdoctoral Research fellow** at Roussel Uclaf Research Center (now Sanofi-Aventis), Romainville (93)

Hemisynthesis of new leading antibiotics of the macrolide family as inhibitors of resistant bacterial strain.

PUBLICATION RECORDS

Total number of publications: 46 (in peer-reviewed journals listed in Science Citation Index)

Book chapters: 6

Selected Recent Publications:

• M. Minekus, M. Alminger, ..., C. Dufour, ...and A. Brodkorb. A standardised static in vitro digestion method suitable for food – an international consensus, *Food & Function*, **2014**, 5, 1113-1124.

• Alminger M., Aura A.-M., Bohn T., Dufour C., El S.N., Gomes A., Karakaya S., Martínez-Cuesta M.C., McDougall G.J., Requena T., and Santos C.N. In Vitro Models for Studying Secondary Plant Metabolite Digestion and Bioaccessibility. *Comprehensive Reviews in Food Science and Food Safety*, **2014**, 13, 413–436.

• M. Gobert, D. Rémond, M. Loonis, C. Buffière, V. Santé-Lhoutellier, C. Dufour. Fruits, vegetables and their polyphenols protect dietary lipids from oxidation during gastric digestion, *Food & Function*, **2014**, 5, 2166-2174.

• Lorrain B., Dangles O., Loonis M., Armand M., Dufour C. Dietary iron-initiated lipid oxidation and its inhibition by polyphenols in gastric conditions. *Journal of Agricultural and Food Chemistry*, **2012**, 60, 9074–9081.

OTHER SCIENTIFIC ACTIVITIES

- Direction/co-direction of 6 PhD students, co-supervision of 5 PhD students, supervision of 16 undergraduate students.
- Thesis committee member for undergraduate and PhD students
- Reviewing experience for journals in food science, chemistry and nutrition
- Reviewing experience for fundings (Danish Council for Independent Research, INSA, ANRT, CAPES COFECUB, ECOS...)
- Member of the COST Action FA 1005 (InfoGest, coord. D. Dupont), Expertise in the WG2 (harmonisation of gastrointestinal digestion conditions) (2012-2015)

INSTITUTIONAL APPOINTMENTS:

- Member of the scientific committee of the INRA-CEPIA department (2011- 2016)
- Member of the communication group of the INRA department CEPIA (2007-)
- Member of the scientific commission of the INRA research center of Avignon (2007-2011)
- Member of the Board of Groupe Polyphénols (2002-2008)