

Dr. Alejandro Cifuentes is a Full Research Professor at the National Research Council (CSIC) in Madrid, Spain. He received his PhD in Analytical Chemistry at the University of Valladolid, Spain and carried out his postdoctoral training at the University of Amsterdam, Holland. He has been Director of the Institute of Food Science Research and Deputy Director of the Institute of Industrial Fermentations, both belonging to CSIC. He holds different national and international awards, is author in over 190 SCI papers, 16 books and book chapters and 7 patents. He is Editor of TrAC-Trends in Analytical Chemistry (impact factor of 6.602) and Editor of Electrophoresis (impact factor of 3.564). He is also member of the Editorial Board of other 12 international journals. Alejandro's activity includes advanced analytical methods development for Foodomics, food quality and safety, as well as isolation and identification of biologically active natural products. His current h index is 35 (Dec 2011) and his works have received more than 4000 citations.



## **Recent Developments in Metabolomics of Alzheimer and Foodomics of Colon Cancer.**

### Summary:

The main objectives of this seminar will be:

1-To present a general overview on the basics of a new discipline called **Foodomics**, that has been introduced by our group (Cifuentes et al., *J. Chromatogr. A*, 1216 (2009) 7109; *Electrophoresis* 31 (2010) 205; *Mass Spec. Rev.* 31 (2012) 49).

2-To describe the principles of Metabolomics, an essential tool used in Foodomics.

3-To present the latest results obtained in our lab on metabolomic analysis of cerebrospinal fluid for the early detection of Alzheimer disease (AD). The new Metabolomics methodology combines high efficiency separation techniques with high resolution mass spectrometry. The results are useful to predict AD progression a critical step in current AD diagnostic. Besides, in a future, they should make easier new investigations on the effect of diet on AD prevention.

4- To discuss new possibilities for improving our limited understanding on the roles of nutritional compounds at molecular level (i.e., their interaction with genes and their subsequent effect on proteins and metabolites). This knowledge will allow in a non-distant future the rational design of strategies to manipulate cell functions through diet, which is expected to have an extraordinary impact on our health. In this fourth objective, we will present some of the latest results from our group on *Foodomics* evaluation of the effect of dietary polyphenols against colon cancer cells (at gen, protein and metabolite level) with special emphasis on the difficulty to achieve a global view of (food-related) biological systems.

Alejandro Cifuentes

Laboratorio de Foodómica. CIAL, Madrid

Consejo Superior de Investigaciones Científicas

[a.cifuentes@csic.es](mailto:a.cifuentes@csic.es)