

Development of an immunoanalysis technique based on *functionalized magnetic nanobeads for mycotoxins detection*

Project Acronym: IMUNOMAG  
Bilateral Project Romania – France (2009-2010)

Partner from Romania: University of Bucharest, prof. dr. Camelia Bala  
Partner from France : Université Claude Bernard Lyon 1, Dr. Nicole Jaffrezic-Renault

Objectives :

1. *Study of reaction kinetics for mycotoxin-antibodies.*
2. *Ab immobilization on magnetic nanobeads*
3. *Characterization of the immunoassay method*

Abstract

Mycotoxins, toxic xenobiotic substances, are regarded as natural substances, but instead called byproducts that occur during the development of parasitic fungi on plants in the field or the material stored and then used to feed humans and animals.

They can also be seen as primary metabolites, both toxic to humans and animals. Mycotoxins develop during or after harvesting the crop growth following an incorrect storage, and can enter the food chain through food products. Mycotoxin contamination of the environment depends on the bodies involved in the production of mycotoxins and the degree of invasion of these microorganisms. The study aimed to optimize the main experimental conditions that influence the sensitivity and selectivity of analytical method for determination of mycotoxins. A second objective of the study was to use the magnetic nanobeads as solid support for immobilization of antibodies for the determination of mycotoxins. The advantages of this method is high sensitivity, using relatively inexpensive instrumentation, small volumes of sample, and the possibility of miniaturization.

Results

*De nouvelles perspectives dans les interfaces de biocapteurs*

Plenary conference

Camelia BALA

7èmes Journées Maghreb-Europe, MADICA 2010, Tabarka, Tunisie, 20 –22 Octobre 2010

*Noi biosenzori pe baza unui design rational al interfetei biomolecula-suport*

Camelia Bala:

Diaspora in cercetare, Bucuresti, septembrie 2010, Workshop exploratoriu “Nano Sisteme Dinamice: de la Concepte la Aplicatii Senzoristice”

*Nanostructured-based materials as sensors for bioanalytical investigations*

Conferinta plenara

Camelia Bala

108th ICB Seminar on “Micro and Nanosystems in Biochemical Diagnosis – Principles and Applications”, 13-15 mai 2010 Warsaw, Poland

*An impedimetric immunosensor and a surface plasmon resonance biosensor based on functionalized magnetic nanoparticles on gold surface for the detection of ochratoxin A*

Nicole Jaffrezic-Renault, Zamfir Lucian-Gabriel, Irina Geana, Camelia Bala, Lucian Rotariu, Sondes Bourigua, Abdelhamid Errachid

ISE 2010, 26 septembrie - 1 octombrie October 2010, Nice, France

*EIS-magneto-immunosensor for ochratoxin A determination*

Irina Biraruti<sup>1</sup>, Madalina Tudorache, Lucian Rotariu, Sondes Bourigua, Nicole Jaffrezic-Renault, Camelia Bala, Biosensors 2010, Glasgow, 26-28 mai 2010.

*Biocapteurs dans l'analyse de l'environnement et produits agro-alimentaires*

Invited lecture

Camelia Bala

Journées d'Electrochimie, Sinaia, Romania, 6-10 iulie 2009

Nanostructured-based materials as support for bioanalytical systems

Invited lecture

Camelia Bala

1<sup>er</sup> Colloque *Franco – Roumain* en Chimie Moleculaire, Toulouse, Franta, 9-20 Februarie 2009