

MANUNET : TOX-HAZ-ASSESS

Abstract

The main purpose of this project consists in development of a new manufacturing method for an analytical system, based on an innovative combined surface-plasmon resonance - electrochemical platform (SPR-ELEC) integrated into an on-line flow analysis configuration. The designed and optimized on-line analytical system is going to be used for determination of aflatoxin M1 in milk and dairy products. This project addresses needs of the dairy industry to provide food without safety hazards / risks. Mycotoxins, and especially aflatoxins, are important contaminants of the milk, which are accumulated from contaminated feed. From ingested contaminated feed mycotoxins are taken-over and metabolized to even more dangerous toxins – i.e. aflatoxin M1.

Thus, the combination of the surface plasmon resonance (SPR) detection with the electrochemical (ELEC) detection in a common platform is expected to ensure a greater precision for assessment of milk toxin hazard, with an affordable final price of analysis. By integration of this innovative and versatile on-line analytic system (SPR-ELEC) with the sampling system in a critical control point will allow the automation for early detection of milk contamination and will reduce the costs necessary to ensure the food safety.

Rezumat

Scopul principal al acestui proiect consta in elaborarea unei noi metode de fabricare a unui sistem analitic bazat pe o platforma combinata, inovatoare, de tip Rezonanta a Plasmonilor de Suprafata-Electrochimica (SPR-ELEC), integrata intr-o configuratie de analiza on-line in flux. sistemul analitic on-line proiectat si optimizat va fi utilizat pentru determinarea aflatoxinei-M1 din lapte si produse lactate. acest proiect vizeaza nevoile industriei de lactate de a furniza alimente sigure, lipsite de risc de contaminare. Micotoxinele, in special aflatoxinele, sunt contaminanti importanti ai laptelui, fiind acumulati din furajele contaminate. Mai departe, prin ingestia furjelor contaminate, micotoxinele sunt preluate si metabolizate in toxine (metaboliti) mai periculoase, cum ar fi aflatoxina-M1.

Astfel, prin combinarea celor doua metode de detectie, SPR si electrochimica, intr-o platforma comuna, se preconizeaza o crestere a preciziei de evaluare a contaminarii laptelui cu compusi toxici, cu un pret final accesibil pentru analiza. Prin integrarea acestui sistem inovativ si versatil de analiza on-line (SPR-ELEC) cu sistemul de prelevare probe, intr-un punct critic de control, se va permite automatizarea detectarii precoce a contaminarii laptelui si va reduce costurile necesare asigurarii sigurantei alimentare.