

Title An ELIME-array for detection of aflatoxin B₁ in corn samples
Author S. Piermarini, G. Volpe, L. Micheli, D. Moscone and G. Palleschi
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Abstract

The aim of the present work was the development of an ELIME-array to achieve simple and rapid detection of AFB₁ in corn samples. The system is based on an indirect competitive ELISA format using magnetic beads as immobilisation support and eight magnetised screen-printed electrodes as electrochemical transducers.

After an optimisation study, a corn sample treatment, employing an extraction in acetonitrile/water followed by a clean-up step and solvent evaporation, was selected.

For the construction of the calibration curve, which was used to evaluate both evaluation of the matrix effect on the performances of the ELIME-array and for the analysis of Certified Reference Materials (CRMs), standard solutions of AFB₁ were added to blank dried corn extracts reconstituted in PBS. The detection limit and the sensitivity of the assay were calculated to be 0.6 ng mL⁻¹ and 1.5 ng mL⁻¹, respectively.

Precision (11–26%) and recovery (95–114%) data of the ELIME-array, determined by analysing four CRMs, have shown that the proposed system appears suitable as a screening tool for the analysis of AFB₁ in corn samples.