Cost reduction in the development of aflatoxin immunoaffinity columns

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Aflatoxins (AFs) are toxic metabolites produced by a variety of fungi from Aspergillus spp. AF analysis is conducted with a liquid extract of the food sample to be analyzed. During the extraction process, several metabolites of the sample are co-extracted with the AF. The sample clean-up step comprises affinity based purification techniques, particularly IACs in order to concentrate AFs and purify them from complex extract matrix. In an active mycotoxin analysis laboratory, hundreds of IACs are used for sample analysis every day and IACs comprise the major cost of AF analysis. Reducing the production costs for IAC development will significantly affect AF analytical costs and increase the availability of the tests, especially in developing countries. Immunoaffinity chromatography utilizes the specificity and reversibility of antibody-antigen interactions where antibodies are immobilized to a solid support in order to create a stationary phase for chromatographic separation. So there are two main components of IACs where cost reduction studies can be focused: Antibody costs and the cost of solid support. In this study, we will present our study for the reduction of antibody cost up to 95% by changing the purification approach where we used semi-purified antibodies for IAC production. This approach not only significantly reduced costs related with consumables and personnel; it also prevented antibody losses during purification process and related activity decrease. We will evaluate the reduced antibody costs in relation with the resin costs and discuss the methods of cost reduction for chromatographic resins that comprise the solid support.

Biography

Ozlem Ertekin is currently working as a Senior Research Scientist at The Scientific and Technological Research Council of Turkey (TUBITAK), Marmara Research Center, Genetic Engineering and Biotechnology Institute, Laboratory of Diagnostic Technologies, Turkey. She has worked at several projects related with environmental and food safety as either Research Scientist or Work Package Leader. She has received her PhD at Gebze Technical University, Department of Molecular Biology and Genetics.

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