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Determination of Aflatoxins in Edible-Medicinal Plant Samples by HPLC with Fluorescence Detector and KOBRA-Cell

Authors : Isil Gazioglu, Abdulselam Ertas

Abstract : Aflatoxins (AFs) are secondary toxic metabolites of Aspergillus flavus and A. parasiticus. AFs can be absorbed through the skin. Potent carcinogens like AFs should be completely absent from cosmetics, this can be achieved by careful quality control of the raw plant materials. Regulatory limits for aflatoxins have been established in many countries, and reliable testing methodology is needed to implement and enforce the regulatory limits. In this study, ten medicinal plant samples (Bundelia tournefortti, Capsella bursa-pastoris, Carduus tenuiflorus, Cardaria draba, Malva neglecta, Malvella sharardiana, Melissa officinalis, Sideritis libanotica, Stakys thirkei, Thymus nummularius) were investigated for aflatoxin (AF) contaminations by employing an HPLC assay for the determination of AFB1, B2, G1 and G2. The samples were extracted with 70% (v/v) methanol in water before further cleaned up with an immunoaffinity column and followed by the detection of AFs by using an electrochemically post-column derivatization with Kobra-Cell and fluorescence detector. The extraction procedure was optimized in order to obtain the best recovery. The method was successfully carried out with all medicinal plant samples. The results revealed that five (50%) of samples were contaminated with AFs. The association between particular samples and the AF contaminated could not be determined due to the low frequency of positive samples.

Keywords : aflatoxin B1, HPLC-FLD, KOBRA-Cell, mycotoxin
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