

QUANTIFICATION OF AFLATOXINS IN FOOD BY HPLC/FLD WITH PRE-DERIVATIZATION BY TFA

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Aflatoxins determination is relevant both for animal feed and human health. Many crops are susceptible to contamination by mycotoxins, which can occur in the field, before and after harvest, and also during transport and storage of products. Aflatoxins produced by *Aspergillus flavus* and *Aspergillus parasiticus* are mycotoxins that can cause serious damage to humans and animals by their high toxicity and therefore it becomes necessary to implement effective analytical methods for detection and quantification of these contaminants. The objective of this study was to evaluate the recovery of aflatoxins (B1, B2, G1 and G2) in corn and peanuts by the following method: extraction by organic solvents, purification with MycoSep® columns and quantification by high performance liquid chromatography with fluorescence detection (HPLC/FLD) and pre-derivatization with trifluoroacetic acid (TFA) [1]. In this study, seventy one experiments were conducted on the contamination levels of 2.0 µg /kg, 4.0 µg /kg and 6.0 µg /kg of sample. The limits of detection (LOD) and quantification (LOQ) established by the calibration curve were respectively: B1(0,04 and 0,13µg/kg); B2 (0,02 and 0,08µg/kg); G1(0,03 and 0,11 µg/kg); G2 (0,03 and 0,10µg/kg).The extraction of aflatoxins in corn and peanuts was made with a mixture of acetonitrile / water at Omni® mixer for 3 minutes at 800rpm followed by filtration on filter paper. The purification of the solution was made by MycoSep columns. The eluate was evaporated under nitrogen and resuspended with acetonitrile. Aflatoxins were then converted into their hemiacetals by derivatizing agent: water: trifluoroacetic acid:acetic acid (7:2:1), heating to 65 ° C for 8.5 min. Then this solution was analyzed in HPLC system /DF: chromatographic column X Terra® RP 18, 5µm (4.6 x 150mm); mobile phase: water / acetonitrile/methanol (gradient), flow: 1,2mL/min; FLD: excitation / emission: 360nm / 440nm; injection volume:10µL. The values obtained for the recoveries were as follows: AFLA B1 (93%); AFLA B2 (96%), G1 (98%), G2 (87%) in corn and AFLA B1 (81%); AFLA B2 (97%), G1 (79%), G2 (91%) in peanut. These values are within recommended by the Regulation (EC) n° 401/2006 of the European Union [2] for concentrations between 1-10µg/kg: (70 to 110%).

KEY WORDS: aflatoxins, corn, peanut.

[1] CHO et AL. 2008. Aflatoxins contamination in spices and processed spice products commercialized in Korea. **Food Chemistry**. 107: 1283-1288.

[2] COMMISSION OF THE EUROPEAN COMMUNITIES. Commission Regulation (EC) n. 401/2006 of 23 February 2006. Laying down the methods of sampling and analysis for the official control of the levels of mycotoxins in foodstuffs. **Official Journal of the European Union**, L. 70, v. 49, p. 12-34, 9 mar. 2006.