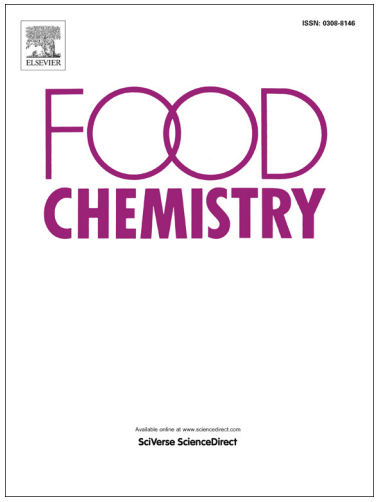

Micro-solid phase extraction with liquid chromatography–tandem mass spectrometry for the determination of aflatoxins in coffee and malt beverage

Wejdan Shakir Khayoon, Bahruddin Saad, Baharuddin Salleh, Normaliza Hj Abdul Manaf, Aishah A. Latiff

PII: S0308-8146(13)01314-9
DOI: http://dx.doi.org/10.1016/j.foodchem.2013.09.049
Reference: FOCH 14677

To appear in: *Food Chemistry*

Received Date: 19 July 2012
Revised Date: 15 February 2013
Accepted Date: 8 September 2013

Please cite this article as: Khayoon, W.S., Saad, B., Salleh, B., Manaf, N.H.A., Latiff, A.A., Micro-solid phase extraction with liquid chromatography–tandem mass spectrometry for the determination of aflatoxins in coffee and malt beverage, *Food Chemistry* (2013), doi: http://dx.doi.org/10.1016/j.foodchem.2013.09.049

Micro-solid phase extraction with liquid chromatography-tandem mass spectrometry for the determination of aflatoxins in coffee and malt beverage.

Wejdan Shakir Khayoon[a], Bahruddin Saad[a]*, Baharuddin Salleh[b], Normaliza Hj Abdul Manaf[c], Aishah A. Latiff[c]

[a]*School of Chemical Sciences, Universiti Sains Malaysia, 11800, Penang, Malaysia.*

[b]*School of Biological Sciences, Universiti Sains Malaysia, 11800, Penang, Malaysia.*

[c]*Doping Control Centre,Universiti Sains Malaysia, 11800, Penang, Malaysia*

Abstract

A single step extraction-cleanup procedure using porous membrane-protected micro-solid phase extraction (µ-SPE) in conjunction with liquid chromatography-tandem mass spectrometry for the extraction and determination of aflatoxins (AFs) B_1, B_2, G_1 and G_2 from food was successfully developed. After the extraction, AFs were desorbed from the µ-SPE device by ultrasonication using acetonitrile. The optimum extraction conditions were: sorbent material, C8; sorbent mass, 20 mg; extraction time, 90 min; stirring speed, 1000 rpm; sample volume, 10 mL; desorption solvent, acetonitrile; solvent volume, 350 µL and ultrasonication period, 25 min without salt addition. Under the optimum conditions, enrichment factor of 11, 9, 9 and 10 for AFG_2, AFG_1, AFB_2 and AFB_1, respectively were achieved. Good linearity and correlation coefficient was obtained over the concentration range of 0.4-50 ng g^{-1} (r^2 0.9988 - 0.9999). Good recoveries for AFs ranging from 86.0-109% were obtained. The method was applied to 40 samples involving malt beverage (19) and canned coffee (21). No AFs were detected in the selected samples.