



February 2017

Aflatoxins B/G in Figs ~ manual and automated ~

Do you have a special matrix that we should test for mycotoxins? Please let us know and write an e-mail to: mycotoxins@LCTech.de

Sample Preparation

MYCOTOXINS

Figs

Around 1.5 million of tons of figs are harvested each year, mainly in the Mediterranean. In 2015 alone, about 7250 tons of figs were imported from Turkey. They are very popular in dried form. Recently, figs became conspicuous in the RASFF portal of the European Commission because of (too) high contents of aflatoxins B/G. Over the past year 51 controls got conspicuous, 39 even led to an import ban. [Source: RASFF Portal]

Immunoaffinity Columns for the Clean-up of Aflatoxins B1, B2, G1 and G2

The immunoaffinity columns AflaCLEAN and AflaCLEAN Select are suitable for the automated sample preparation in aflatoxin analysis using HPLC with fluorescence detection or LC-MS. The columns possess a very high matrix tolerance and are able to bind aflatoxins with a very high specificity. With only three provided extraction protocols, all matrices from A, for apricot, to Z for zest, can be tested whilst obtaining excellent recovery rates. This also applies for figs. The columns are available in a convenient 3 mL polypropylene format. In addition the AflaCLEAN Select are also available in a 1 mL format. The Select format is attractive for high sample throughput because of its competitive price, yet maintaining the same performance and a high sample throughput.



Robotik System FREESTYLE SPE
with EVAporation-Module

Automated Processing with the Sample Preparation System FREESTYLE SPE

In almost every analytical laboratory, samples are routinely cleaned via SPE columns in order to obtain clean solutions for subsequent analysis or analyte concentration. The automation is the perfect solution to simplify these routine working steps and to achieve reproducible results and good recoveries. Diligently day and night, the most tedious applications in mycotoxin analysis will be accurately processed by the automated sample preparation system FREESTYLE SPE. In addition to LCTech's immunoaffinity and SPE clean-up columns the FREESTYLE SPE can also be used for all types of mycotoxin columns of leading manufacturers.

Protocol of Manual Processing

Homogenise 20 g of dried figs and add 2 g sodium chloride. Extract the sample with 100 mL methanol/water (80/20 (v/v)) and 50 mL n-hexane, in order to remove fat and essential oils. The extraction should be performed for 20 minutes.

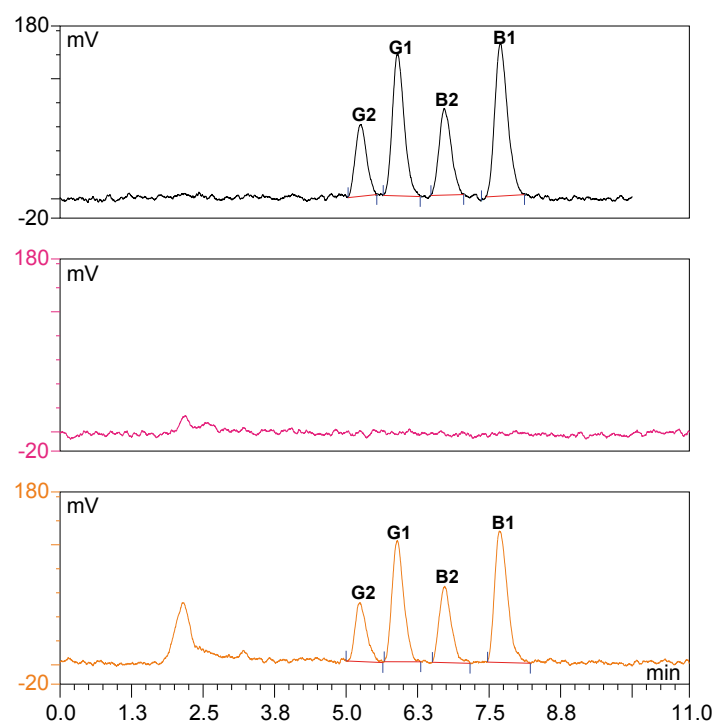
Filtrate the raw extract and dilute 14 mL with 86 mL PBS. In order to avoid precipitations, filtrate it again through a glass fiber filter.

Load the sample onto the immunoaffinity column AflaCLEAN with a flow rate of 2 mL/min and wash it afterwards with 10 mL deionised water, to remove impurities.

Dry the column by flushing air through it and elute the toxins by adding 2 mL methanol. Keep in mind that the column bed is incubated with methanol for 5 minutes in order to ensure a fully denaturation of the antibodies and release of toxins.

Dilute the eluate to HPLC conditions. Afterwards the sample will be measured by the HPLC and by photochemical post column derivatisation, e.g. with the LCTech UVE reactor.

Chromatograms



Black: Standard 14 ng/2 mL Aflatoxins (represents 10 ppb)
Red: Figs, not spiked
Orange: Figs, 10 ppb spiked

HPLC-Conditions (Ochratoxin A)

HPLC:	isocratic
Column Oven:	36 °C
Separation Column:	RP C-18 (P/N 10544)
Flow Rate:	1.2 mL/min
Eluent:	HPLC-water/methanol/ acetonitrile (60/30/15 (v/v/v))
Fluorescence Detection:	Derivatisation with UVE Photochemical Reaktor
Excitation Wavelength:	365 nm
Emission Wavelength:	460 nm

Recovery Rates

Content of Aflatoxin B/G in Figs

Aflatoxin	B1	B2	G1	G2
Standard*	100	100	100	100
Recovery Rate** Figs, 10 ppb	90	93	89	87

*Standard is set = 100 %, **Corrected with non-spiked sample/
The results correspond to the performance specifications of EC 401/2006 (Section 4.3.1)



Immunoaffinity columns AflaCLEAN
for the Aflatoxins B1, B2, G1 and G2 in
Food and Feed



These LCTech products were used:

AflaCLEAN,
Immunoaffinity Columns for Aflatoxins B/G
P/N 10514 / 11721

UVE, Photochemical Reaktor
P/N 10519

FREESTYLE SPE, Robotic System
for Automated Sample Preparation
P/N 12663 / 12668