Matrix of the Month

April 2017

Aflatoxin B/G in Chia Seeds ~ 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

Chia Seeds

Chia seeds are the fruits of the chia plant (a species of sage) which is almost exclusively occurring in Mexico. Containing plenty of nutrients, these small, inconspicuous grains are considered to be very healthy. The seeds are imported and routinely inspected for mycotoxins. The maximum contents of aflatoxins B/G in food are regulated by the European Commission (EG) Nr. 1152/2009.

Immunoaffinity Columns for Clean-up of Analytes in Food and Feed

For a fast and efficient clean-up of the aflatoxins B1, B2, G1 and G2 in food and feed, LCTech offers the immunoaffinity columns AflaCLEAN, AflaCLEAN Select or AflaCLEAN SMART. The columns possess a very high matrix tolerance and are able to bind aflatoxins with a very high specificity. The chromatographic results are excellent, even with difficult matrices. Each of the clean-up columns is suitable for the automated processing, e. g. with the robotic system FREESTYLE SPE.

Automated Processing via FREESTYLE SPE

Automated sample preparation in the area of solid phase extraction has never been as easy as by using the FREESTYLE SPE robotic system. You can handle your SPE-processes fully automated around the clock, even at the weekend. Flexible in sample loading and elution, the FREESTYLE system can be used for many application fields: from mycotoxin and environmental analysis up to forensic applications and samples of doping control.

Just transfer your manual methods onto the FREESTYLE SPE robotic system and you have more time for other important activities.

FREESTYLE SPE robotic system with EVAporation-module

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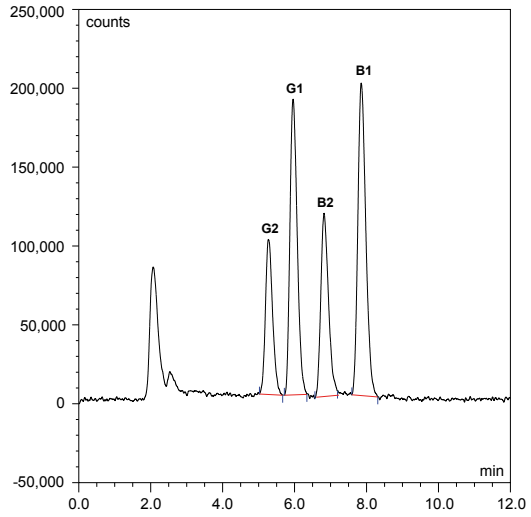
Protocol of Manual Processing

Homogenise 10 g of chia seeds and add 1 g sodium chloride, 50 mL 80/20 (Methanol/Water (v/v)) and 25 mL n-hexane, in order to extract the mixture for 20 - 30 minutes. Subsequently filtrate the extract and centrifuge it for the phase separation between the aqueous (lower) phase and the n-hexane (upper) phase with 2000 x g for 10 minutes.

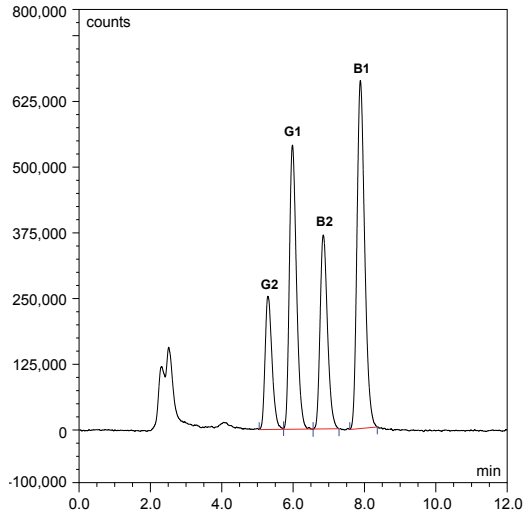
Dilute 2 mL of the aqueous (lower) phase with 12 mL PBS-buffer (contains 8 % Tween20). Load the extract onto the immunoaffinity column AflaCLEAN or AflaCLEAN Select. Afterwards wash the column with 2 x 5 mL deionised water and load this solution also onto the IAC-column.

Dry the column and elute the toxin with 2 mL methanol. Keep in mind, that the methanol incubates for 5 minutes into the column bed, in order to dissolve the antibody toxin bond completely. Dilute and measure the eluate to HPLC-conditions.

Chromatograms



Standard 4 ng / 2 mL (represents 10 ppb)



Chia seeds 10 ppb

HPLC-Conditions
(Aflatoxin B/G)

HPLC:	isocratic
Column Oven:	36 °C
Separation Column:	RP EC 125/3 nucleosil 120-3 C18
Flow Rate:	0.6 mL/min
Eluent:	HPLC-water/methanol/ acetonitrile (40/55/5 (v/v/v))
Fluorescence Detection:	Derivatisation with UVE Photochemical Reactor
Excitation Wavelength:	365 nm
Emission Wavelength:	460 nm

Recovery Rates
Content of Aflatoxins B/G in Chia Seeds

Aflatoxin	**B1**	**B2**	**G1**	**G2**
Standard*	100	100	100	100
Recovery Rate Chia Seeds, 10 ppb**	90	95	94	86

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

LCTech meets the high demands of the European and international legal requirements concerning mycotoxin analysis and controls every single production step. A detailed quality certificate is included in each pack.

AflaCLEAN immunoaffinity columns

These LCTech products were used:

AflaCLEAN / AflaCLEAN Select
Immunoaffinity Columns for Aflatoxins B/G
P/N 10514 / 12062

UVE, Photochemical Reactor
P/N 10519

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

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