Matrix of the Month

Aflatoxins B/G in Chestnuts:
manual and fully automated via FREESTYLE SPE

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 and Analysis

MYCOTOXINS

FREESTYLE SPE for Automated Sample Preparation

Automated sample preparation has never been as easy as it is when using the FREESTYLE SPE robotic system. You can handle your SPE-processes fully automated around the clock and even at the weekend. Flexible in sample loading and elution, the system can be used in a wide area of applications - from the mycotoxin analysis to forensics field. Transfer your manual method to the FREESTYLE SPE . And you have more time for other important activities.

Processing protocol -manual / automated-

Homogenize 20 g of chestnuts and add 2 g sodium chloride. Extract the sample material with 100 mL (methanol/water (80/20 (v/v))) and 50 mL n-hexane to remove fat and essential oils. The extration should be conducted for at least 10 minutes.

Filtrate the raw extract and dilute 10.5 mL with 64.5 mL PBS. Load 50 mL (represents thereof 1.4 g) onto the AflaCLEAN immunoaffinity column and wash the column with 10 mL de-ionised water. For automated processing with the robotic system FREESTYLE SPE, parametrize a maximum flow rate of 2 mL/min for sample injection and washing of the AflaCLEAN columns.

Dry the column by flushing air through it. For automated processing two possibilities are available: either the syringe pump circulates 40 mL of air by 20 mL/min or the optional nitrogen-port dries the column with nitrogen.

Elute the toxins with 2 mL methanol. Keep in mind that the column bed is incubated with methanol for at least 5 minutes in order to ensure the complete denaturation of the antibody. When using automated processing via FREESTYLE SPE, choose a slow flow rate (0.2 – 0.5 mL/min) to ensure the elution efficiency.

Immunoaffinity Columns AflaCLEAN

Matrix of the Month

HPLC-Conditions
(Aflatoxins B/G)

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

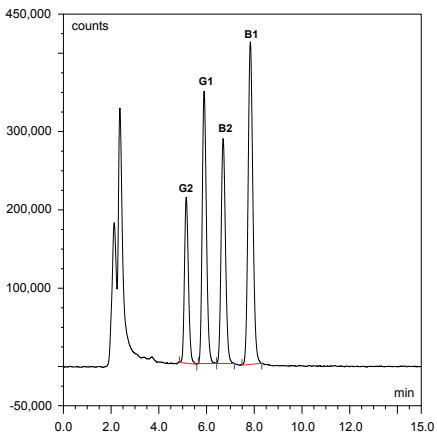
Robotic System FREESTYLE SPE with Evaporation Module

Recovery Rates
Content of Aflatoxin B1, B2, G1 and G2 in Chestnuts

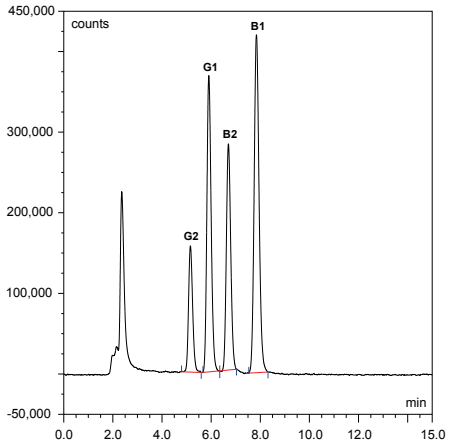
Aflatoxin	B1	B2	G1	G2
Standard*	100	100	100	100
Recovery Rate Chestnut, 10 ppb**	94	91	92	69

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

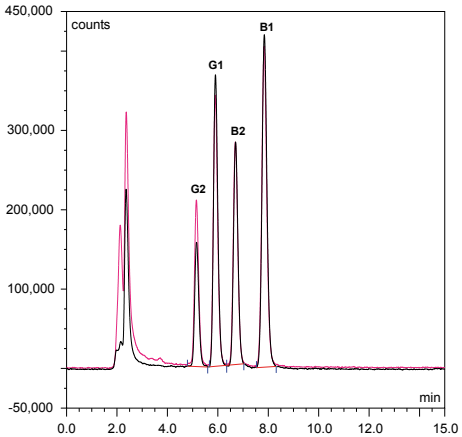
Chromatograms -manual / automated-



Chestnuts (10 ppb total aflatoxin) processed manually



Chestnuts (10 ppb total aflatoxin) processed via FREESTYLE SPE



Overlay of chromatograms: processed via FREESTYLE SPE (black), processed manually (red)

Conclusion

The comparable recovery rates and chromatograms of manual and automated processing show that the clean-up of aflatoxins B/G can be automated excellently via FREESTYLE SPE.

Every manual method can be transferred to automation – you only need a few clicks in the software on the FREESTYLE system. And your samples can be processed unattended, reproducible and around the clock.

These LCTech products were used:

AflaCLEAN Immunoaffinity Columns
for Aflatoxins B1, B2, G1 and G2
P/N 10514 / 11721

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

LCTech GmbH, Bahnweg 41, 84405 Dorfen, Germany, Tel. +49 8081 9368-0, Fax +49 8081 9368-10, mycotoxins@LCTech.de, www.LCTech.de