

Matrix of the Month

September 2015:

Aflatoxins B/G in Hazelnut

manual or automated
with the robotic system
FREESTYLE SPE



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

Automated Sample Preparation

Facilitate your sample preparation with the robotic system FREESTYLE.

Due to the modular design of the system you can equip the basic building block, FREESTYLE BASIC, with different modules depending on your requirements: From Solid Phase Extraction, Evaporation, Gel permeation chromatography or combinations of all these applications up to fully automated processing with the HPLC-Direct Injection-module that connects the FREESTYLE directly to your existing HPLC-system.

The robotic system FREESTYLE allows the unattended sample preparation around the clock even at the weekend.

Automated Processing with FREESTYLE SPE

Equip the FREESTYLE SPE with the immunoaffinity columns AflaCLEAN or AflaCLEAN Select and collection containers. Put your homogenised samples into the sample racks and chose the appropriate method for your sample preparation or define a new method inserting the needed parameters. Saving this new method within the software you can easily use it again and again for future processing.

Now start the system and have FREESTYLE handle your samples automatically. After completion of the process your samples are ready for further analytical processing.



*Simple, reliable,
around the clock:
FREESTYLE SPE*

Protocol of Manual Processing

Use 20 g of hazelnut (homogenised) and add 2 g sodium chloride and extract the mixture with 100 mL methanol/water (80/20 (v/v)) in presence of 50 mL n-hexane for 3 to 10 minutes. Filtrate the crude extract and use the lower phase (contains no n-hexane) for further processing. Dilute 7 mL of this filtrate with 43 mL PBS buffer and filtrate the solution again to remove turbidities.

Load up to 50 mL of the sample (represents 1.4 g matrix equivalent) onto the immunoaffinity column AflaCLEAN with a maximum flow rate of 2 mL/min. Rinse the sample reservoir with 10 mL deionised water and load this solution onto the AflaCLEAN column, too. Dry the column and 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. Collect the eluate and mix 250 µL with acetonitrile and HPLC-water to adjust it to the HPLC conditions.

HPLC Conditions

Aflatoxins B/G

HPLC:	Isocratic
Column oven:	36 °C
Separation column:	RP C18 (P/N 10522)
Flow rate:	1.2 mL/min
Eluent:	HPLC-water/methanol/acetonitrile (60/30/15 (v/v/v))
Fluorescence detection:	Photochemical derivatization with UVE
Excitation wavelength:	365 nm
Emission wavelength:	460 nm

Recovery Rates

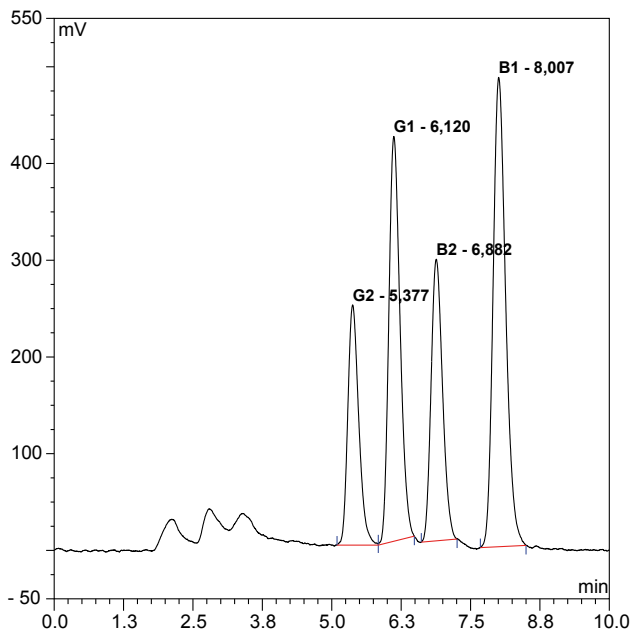
Content of Aflatoxins B1, B2, G1 and G2 in Herbal Drugs				
Aflatoxins	B1	B2	G1	G2
Standard*	100	100	100	100
Recovery rate** hazelnuts 10 ppb	93	95	98	94

* Standard is set = 100 % , ** corrected with non-spiked sample

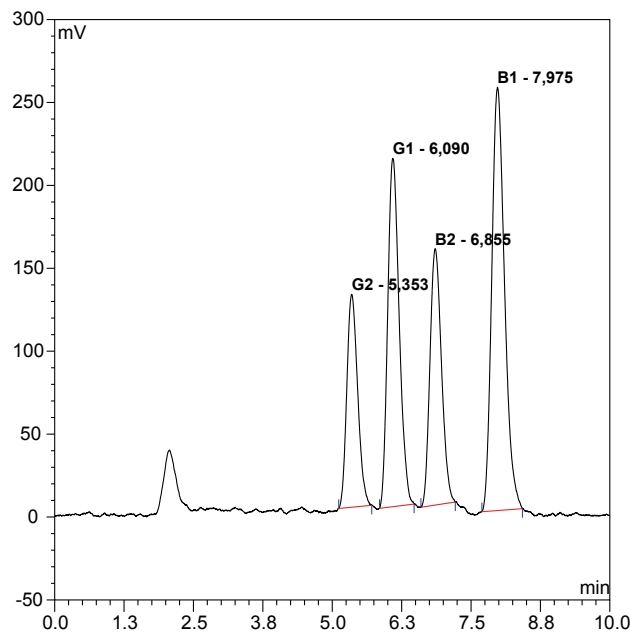


Chromatograms →

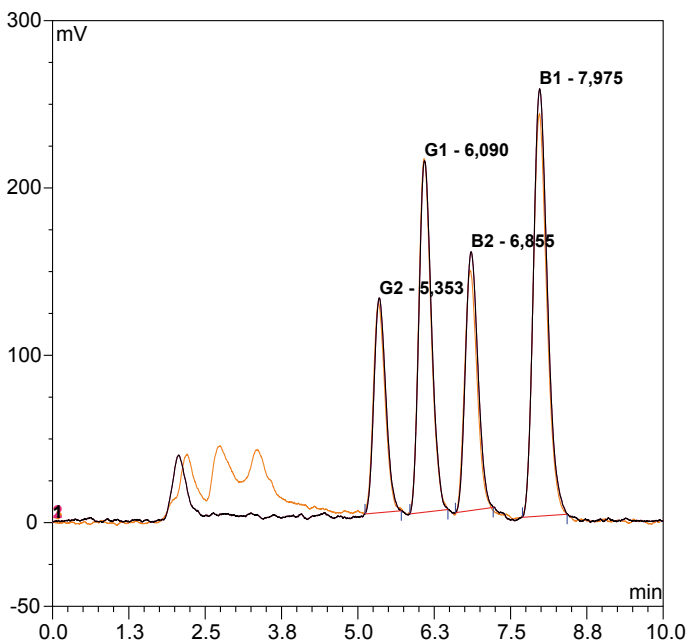
Chromatograms



Hazelnut, spiked with 7 ppb



Aflatoxin standard, 5 ng/2 mL (represents 7 ppb)



Overlay of chromatograms:
 Standard 5 ng/2 mL, represents 7 ppb (black)
 Hazelnut, spiked with 7 ppb (orange)

These LCTech products were used:

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

UVE, Photochemical Reactor for the Aflatoxin Analysis
 P/N 10519

HPLC Column for Mycotoxin Analysis
 P/N 10522

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

Do you have further questions?
 Please just write an e-mail to info@LCTech.de