

Matrix of the Month

May 2015:

Aflatoxins B/G in Herbal Drugs* for Medical Treatment

- 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 info@LCTech.de!

Automated Processing with FREESTYLE

Automated sample preparation with the robotic system FREESTYLE clearly facilitates your daily work in the laboratory. Due to the modular setting you are flexible in your applications: from SPE or GPC applications, with or without EVaporation up to a complete automation solution with the HPLC Direct Injection module or the ThermELUTE™ module for the mycotoxin analysis - everything is possible!

Equip the FREESTYLE system with AflaCLEAN or Afla-OtaCLEAN immunoaffinity columns and your samples. Configure the required method in the easy to operate software with i.e. flow rate, sample loading and elution as described in the manual processing. The different procedures are already stored in the software. Press the START button.

From now on the processing is taken over by the FREESTYLE system. As a result you get fully prepared samples ready to be used in the subsequent analysis respectively in finished chromatograms when using the ThermELUTE™ module and the AflaCLEAN SMART columns.



FREESTYLE with SPE and EVaporation module

* composed of extracts of: Paeonia Rubrae Radix, Platycodi sp. Radix, Glycyrrizae sp. Radix, Disploclisia Glaucoscens Diels, Menthae Piperitae Folium, Zingiberis Rhizoma, Curcuma Rhizoma, Centelae Herba



Protocol of Manual Processing

Use 10 g of the herbal drugs and add 1 g sodium chloride and extract the mixture with 100 mL methanol/water (80/20 (v/v)) in presence of 50 mL n-hexane. Filtrate the sample and mix 2 mL of the lower phase of this filtrate with 12 mL PBS buffer containing 8% Tween 20.

Load the diluted extract (represents 0.2 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 with a gently airflow 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 dilute it according to the HPLC conditions.

HPLC Conditions

Aflatoxin B/G

HPLC: Isocratic

Column oven: 36 °C

Separation column: RP C18 (P/N 10522)

Flow rate: 1.2 mL/min, water/methanol/acetonitrile (60/30/15 (v/v/v))

Fluorescence detection: photochemical derivatisation with UVE

Excitation wavelength: 365 nm

Emission wavelength: 460 nm

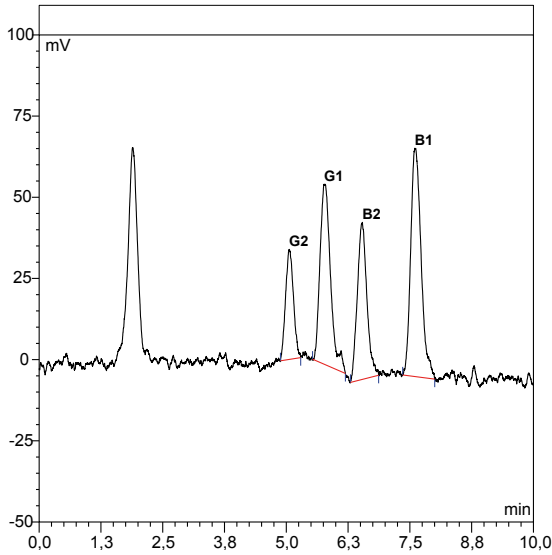
Recovery Rates

Content of Aflatoxins B1, B2, G1 and G2 in Herbal Drugs				
	Aflatoxins			
	B1	B2	G1	G2
Standard*	100	100	100	100
Recovery rate** herbal drugs 13 ppb	104	99	106	87

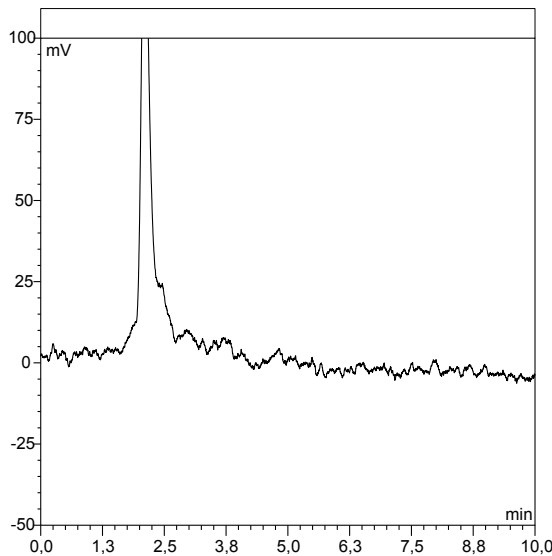
* Standard is set = 100 % , ** corrected with non-spiked sample

Chromatograms →

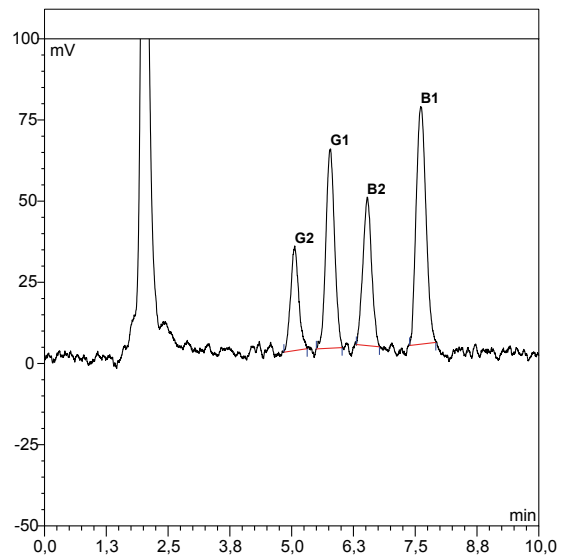
Chromatograms



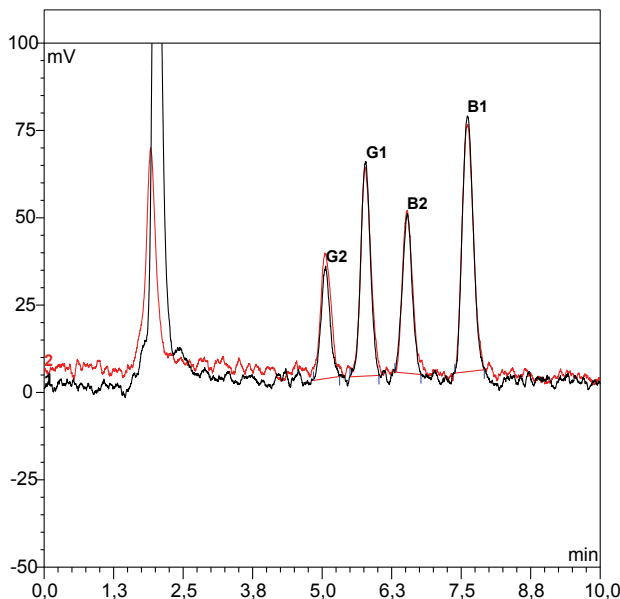
Standard 2.6 ng/2 mL herbal drugs (100 µL injection); represents 13 ppb standard



Herbal drugs, not spiked (100 µL injection)



Herbal drugs 13 ppb, 2.6 ng/14 mL (100 µL injection)



Overlay of chromatograms: standard (red) herbal drugs (black)



AflaCLEAN, various column formats

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

FREESYLE 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