



July 2018

Aflatoxins B/G in Biscuit Flour (Fish Feed) ~ 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

Biscuit Flour

Biscuit flour is made of residues from baked goods. It is widely used in further processing as a component of feeder feed, which is used as an attractant in fishing. The floury consistency dissolves quickly in water, while the sweet biscuit flavour attracts the fish and keeps them at the fishing spot for a long time, as the flour is not filling.

On the following page we examined biscuit flour for aflatoxins B/G. The results obtained can also be transferred to ordinary baked goods such as biscuits or cakes.

Mycotoxins in Food and Feed

Incorrect or prolonged storage can lead to the formation of mould toxins as metabolic products of various *Aspergillus* and *Penicillium* species, so-called aflatoxins, in the silos or bags in which biscuit flour is stored. In addition, mycotoxins can already be produced on the field during the cultivation of cereals, for example. The consumption of food and feed contaminated with mycotoxins can lead to serious health problems for humans and animals. In livestock breeding in particular, mycotoxin contamination in feed can result in high economic losses.

Fast and Efficient Clean-up with AflaCLEAN Select



LCTech supports laboratories worldwide in the clean-up of mycotoxins in food and feed analysis in order to preserve good quality. Particular for the clean-up of Aflatoxins B1, B2, G1 and G2 we offer AflaCLEAN Select, an immunoaffinity column for high sample throughput with excellent performance and low price. Under cool conditions between 4 and 8 °C the column has a shelf life of 9 months.

The convenient 3 mL polypropylene format is suitable for manual as well as for automated processing, e. g. with the robotic system FREESTYLE SPE. Diligently day and night, the system processes reliable various applications in mycotoxin analysis.

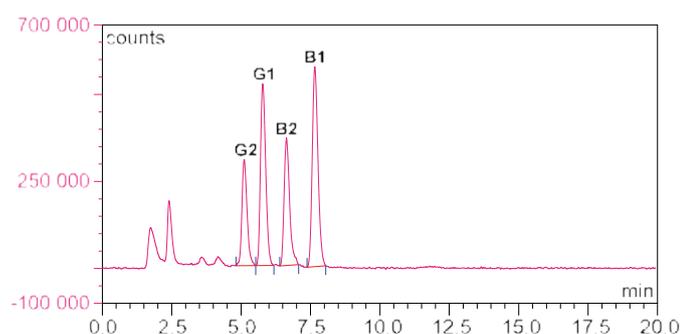
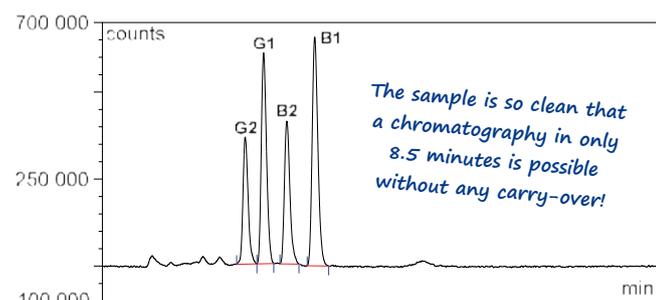
Manual Processing Protocol

Homogenise 20 g of biscuit flour and add 2 g of sodium chloride. Extract the mix with 100 mL of methanol/water (80/20 (v/v)). In order to remove fat, add 50 mL of n-hexane during the extraction. Perform the extraction for at least 10 minutes to ensure high extraction efficiencies.

Filtrate the raw extract and dilute 10.5 mL with 64.5 mL PBS. Filtrate the sample again through a glass fiber filter in order to remove precipitations. Load 50 mL of sample (represents 1.4 g matrix) onto an AflaCLEAN Select column. Wash the column afterwards with 2 x 5 mL de-ionised water.

Dry the column with a short flush of air and elute the aflatoxins with 2 mL of 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.

Chromatogram



Black: Standard 10 ppb (14 ng / 2 mL)

Red: Biscuit flour spiked with 10 ppb

Conclusion

The obtained chromatographic picture for biscuit flour is so clean that no interference signals could be observed, not even during longer chromatography. This is particularly interesting for high-throughput laboratories.

Due to its highly specific interaction with the aflatoxins, the clean-up efficiency of the AflaCLEAN Select column enables a very sensitive analysis. In addition, especially low LOD/LOQ could be achieved.

HPLC-Conditions

(Aflatoxin B/G)

Mycotoxin:	Aflatoxin B/G
HPLC:	isocratic
Column Oven:	36 °C
Separation Column:	RP C-18 (P/N 10522)
Flow Rate:	1.2 mL/min
Eluent:	HPLC-water/methanol/ acetonitrile (60/30/15 (v/v/v))
Fluorescence Detection:	Derivatization with UVE photochemical reactor
Excitation Wavelength:	365 nm
Emission Wavelength:	460 nm

Recovery Rates

Content of Aflatoxin B/G in Biscuit Flour

Mycotoxin	B1	B2	G1	G2
Standard*	100	100	100	100
Recovery Rate** Biscuit Flour, 10 ppt	88	90	85	84

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

These LCTech products were used:

AflaCLEAN Select,
Immunoaffinity Column for Aflatoxin B/G
P/N 12058 / 12059

HPLC Separation Column RP C-18
P/N 10522

FREESTYLE SPE, Robotic System
for Automated Sample Clean-up
P/N 12663 / 12668

UVE Photochemical Reactor
P/N 10519