



Aflatoxins B/G in Peanut Butter

Cleaned-up with **AflaCLEAN**



From Peanuts to Peanut Butter

The peanut is a legume and grows underground. The fruit prefers tropical and subtropical climates, so the typical growing areas are the USA, Argentina, Brazil, Egypt and Senegal.

Peanuts contain a lot of vegetable protein, many unsaturated fatty acids and other important nutrients. Moreover, they are not only delicious and nutritious, but also indispensable in the food and feed industry. To make peanut butter, vegetable oil, salt and sugar are added to the peanuts and processed into a homogeneous spreadable mass. This is how you get the energy-rich spread.

Small + Fast + Economical = **SMART**

Strict EU-wide legal regulations for the maximum content of mycotoxins and constant controls of our food and feed are essential, because the consumption of too high levels of contamination can lead to serious damage to human and animal health.

The challenge many laboratories have to face nowadays is to be able to process many samples as quickly as possible. To make this task easier, LCTech has developed the 3 cm AflaCLEAN SMART columns in addition to the 3 mL AflaCLEAN immunoaffinity columns. The SMART columns not only impress with their small size, but also save you money.

1/5 Time, 1/5 Solvent and 1/5 Waste = 100% Performance

Processing Protocol

Homogenise 20 g of peanut butter and add 2 g of sodium chloride and extract through 100 mL methanol/water (80/20 (v/v)) and 50 mL of n-hexane to remove oils. For high extraction efficiencies, continue the extraction for at least 10 - 20 minutes. Filtrate the raw extract and dilute 7 mL with 43 mL PBS.

With AflaCLEAN column: Load 50 mL of sample (represents 1.4 g Matrix) onto the AflaCLEAN immunoaffinity column. Wash the column with 10 mL water. Dry the column by flushing air through it. Elute the toxins with 10 mL methanol.

With AflaCLEAN SMART column: Load 10 mL of sample onto the immunoaffinity AflaCLEAN SMART column. Wash the column with 2 mL water at a flow rate of 3 mL/min. Dry the column by flushing air through it. Elute the toxins with 400 µL methanol.

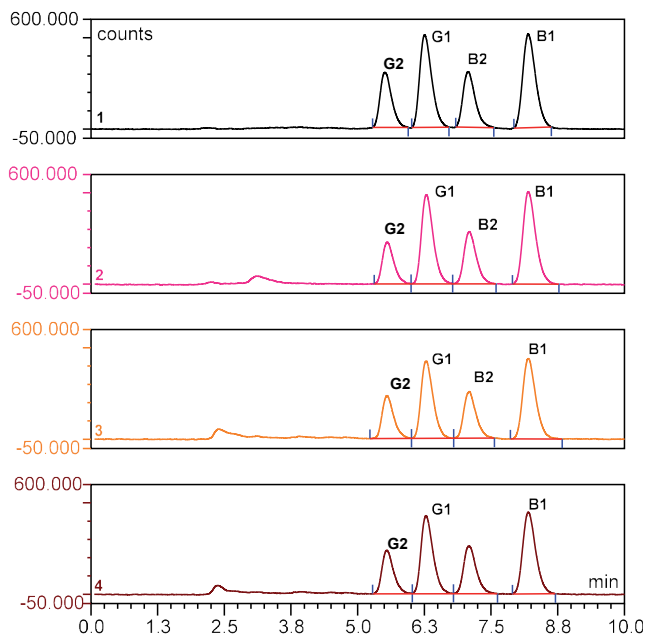
Ensure that the methanol incubates in the column bed for 5 minutes to completely denature the antibodies and release the toxins.



AflaCLEAN 3 mL and AflaCLEAN SMART



Chromatograms



Black: Standard total aflatoxin 28 ng/2ml (represents 20 ppb)
Magenta: Peanut butter, 20 ppb cleaned-up with AflaCLEAN
Orange: Peanut butter, 20 ppb cleaned-up with AflaCLEAN SMART
Brown: Peanut butter, 20 ppb cleaned-up with AflaCLEAN SMART

High capacity, high reproducibility
 =
high performance

Recovery Rates

Content of aflatoxin B1, B2, G1 and G2 in Peanut butter					
Aflatoxin	B1	B2	G1	G2	
Standard*	100	100	100	100	
5 ppb	with AflaCLEAN	94	94	93	83
	with AflaCLEAN SMART	92	92	92	87
10 ppb	with AflaCLEAN	96	97	97	82
	with AflaCLEAN SMART	90	90	92	85
20 ppb	with AflaCLEAN	92	91	93	75
	with AflaCLEAN SMART	89	92	90	86
40 ppb	with AflaCLEAN	87	87	87	71
	with AflaCLEAN SMART	92	92	93	84

* Standard was set = 100%

** Corrected with non-spiked sample

The results are in accordance with the performance specifications of the EC 401 / 2006 (section 4.3.1).

Conditions

HPLC	isocratic
Column oven	36 °C
Separation column	RP C-18 (P/N 10522)
Flow Rate / Eluent	1.2mL/min; HPLC-water/methanol/ acetonitrile (60/30/15 (v/v/v))
Fluorescence Detection	With photochemical reactor UVE
Excitation wavelength	365 nm
Emission wavelength:	460 nm

These LCTech products were used:

- 10514 AflaCLEAN Immunoaffinity Columns for Aflatoxin B/G
- 12862 AflaCLEAN SMART Immunoaffinity Columns for Aflatoxin B/G
- 10522 HPLC Separation column RP C-18
- 10519 UVE Photochemical Reactor

Do you have a special request as to which matrix we should test for you? Contact us by e-mail at: info@LCTech.de