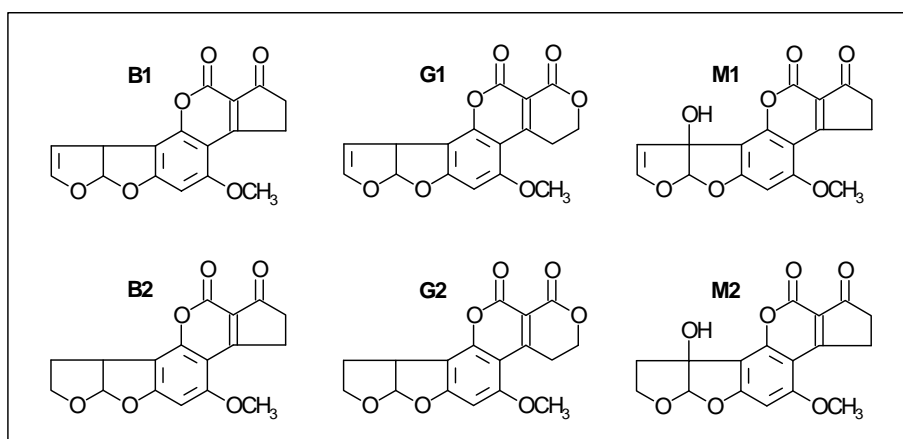


AFLATOXINS



Aflatoxins are naturally occurring toxins and belong to the group of mycotoxins (fungal toxins) that are very harmful to mammals. Aflatoxins are produced by moulds (*Aspergillus flavus*). They cause severe liver damage and are considered to be highly carcinogenic. Aflatoxins are found e.g. in nuts (peanuts, Brazil nuts,...), cereals, dried peppers and in many other vegetable foods. The M-Aflatoxins can be found in milk of cows that have been fed with contaminated feed stuff. The M-aflatoxins are in fact metabolized (hydroxylated) B-Aflatoxins.

The abbreviations for aflatoxins are composed of their fluorescence color (Blue or Green), their origin (Milk) and their relative chromatographic mobility (1 or 2).



Structures of Aflatoxins

Description of Method

In contrast to the aflatoxins B2 and G2, aflatoxins B1 and G1 exhibit little auto-fluorescence only, which increases by a factor of more than 30 after derivatization with an aqueous iodine solution. A further advantage of this method is that all aflatoxins are detected under the same conditions.

For this application, PICKERING offers a complete method comprising the PINNACLE PCX and a special column MYCOTOX™ (C18 Reversed Phase) with guard column.

APPLICATION NOTE

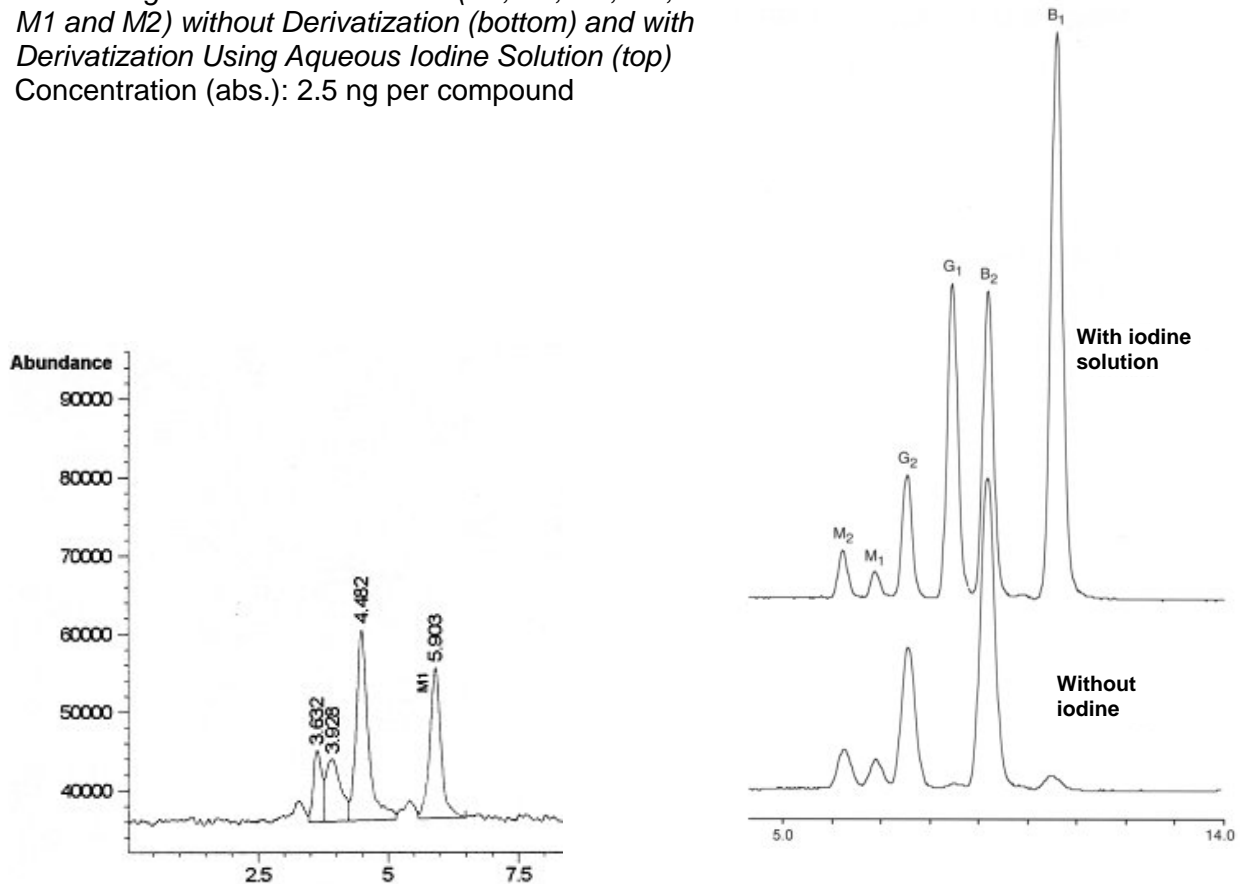
HPLC Conditions and Derivatization Parameters

HPLC	
Operation Mode	Isocratic
Eluent	Water/methanol/acetonitrile (56/22/22; v/v/v)
Degassing	Helium- or vacuum degassed
HPLC Column	MYCOTOX™ RP-C18; 4.6 x 250 mm with guard
Column Oven	42 °C
Flow Rate	1.0 mL/min
Injection Volume	Up to 100 µL
Post-Column Derivatization	
Pinnacle PCX	Single-pump; 1.4 mL reactor
Reactor Volume	1,4 mL
Reactor Temperature	95 °C
Reagent	Aqueous iodine solution (min. 1g/L)
Reagent Flow	0.3 mL/min
Detection	
Detection Type	Fluorescence detection
Excitation Wavelength	365 nm
Emission Wavelength	430 nm
Flowcell	Analytic; pressure stable up to 7 bar

APPLICATION NOTE

Chromatograms

Chromatograms of the Standards (B1, B2, G1, G2, M1 and M2) without Derivatization (bottom) and with Derivatization Using Aqueous Iodine Solution (top) Concentration (abs.): 2.5 ng per compound



C

Chromatogram of a Raw Milk Sample containing M1 (50 ppt) after Clean-up on an Immuno-affinity Column

Literature

- 1) M. W. Trucksess, M. E. Stack, S. Nesheim, S. W. Page, R. H. Albert, *J. Assoc. Off. Anal. Chem.* **1991**, 74, 81 – 88.
- 2) G. Werner, *Agribiol. Res.* **1991**, 44, 289 – 297.
- 3) J. W. Dorner, R. J. Cole, *J. Assoc. Off. Anal. Chem.* **1988**, 71, 43 – 47.
- 4) M. J. Shepherd, J. Gilbert, *J. Food Additives & Contaminants* **1984**, 1, 325 – 335.

APPLICATION NOTE



Order Information

Order Number	Description
1153-1032	PINNACLE PCX; single-pump, 1.4 mL reactor
0352-0050	MYCOTOX™, Aflatoxin Column (4.6 x 250 mm) C18 plus guard column holder with 3 guard cartridges
1612124	MYCOTOX™, Aflatoxin Column (4.6 x 250 mm) C18
18ECG001	Guard column holder with 3 guard cartridges

For the cleanup of samples LCTech provides the 3 mL immunoaffinity columns AflaCLEAN™ or Afla-OtaCLEAN™ and additional useful accessories.

Order Number	Description
10514	AflaCLEAN™; 3 mL immunoaffinity cleanup columns for the aflatoxin B/G analysis; 25 columns/box
11022	Afla-OtaCLEAN™; 3 mL immunoaffinity cleanup columns for the combined aflatoxin and ochratoxin A analysis; 25 columns/box
10896	Reservoir, DURAN® glass for sample loading; reusable; labwasher-proof, with seal and screw-cap
11048	EluVac™ Vacuum manifold for immunoaffinity columns with large capacity (100 mL) reservoirs
11098	Sample rack/reservoirs (ideal in combination with sample reservoirs 10896)
11105	Sample rack for 4 mL Vials (Order No V0004)