Matrix of the Month

NEW Affinity Column ZeaCLEAN SMART for Zearalenone

June 2016

Zearalenone in Corn Oil

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 and Analysis

MYCOTOXINS

The Mycotoxin Zearalenone

Zearalenone (ZEA) is a mycotoxin produced by various fusarium species. In feed, it is adjacent to the toxin deoxynivalenol the most commonly found toxin. Zearalenone itself is toxic, but in the organism it can be converted into even more toxic compound (alpha- or beta-zearalenone).

The New Affinity Column ZeaCLEAN SMART

These interesting ZeaCLEAN SMART columns convince not only by their small size and low price, but also through reduced solvent usage, shorter processing time and very good recovery rates. The columns are suitable for all cereal matrices like flour, corn, bread, pastries, noodles, millet, soy beans, animal feed and even oils. The minimum shelf life of the columns is 12 months from the date of manufacture at a storage temperature between 8 - 30 °C.

The working mode is based on the principles of affinity cromatography. The low sample volume and the concentration on the column allows the verification of zearalenon even in the application field of baby food without significant efforts. Clean-up with ZeaCLEAN SMART can be done either manually or automatically with the robotic system FREESTYLE ThermELUTE™ .

Fully Automated Processing via FREESTYLE ThermELUTE™

Fully automated mycotoxin analysis from raw extract to chromatogram - quite simple with the robotic system FREESTYLE ThermELUTE™: day and night and even at weekends.

Thermal denaturation breaks the toxin-bond on the bed material. The large-volume and aqueous elution with quantitative transfer is made directly into the HPLC sample loop. The HPLC analyses the sample afterwards. Losses caused by evaporation or adsorption are excluded, sensitivity is increased enormously. Per toxin, there is only one method for all regulated matrices. Mycotoxin analysis has never been easier!

Matrix of the Month

Protocol of Manual Processing

Extract 2 g of corn oil with 2 mL n-hexan and 20 mL methanol / 1 % ammonium carbonate (pH 9.0) (90/10 (v/v)) for 30 minutes by vigorous shaking or stirring. Centrifuge the raw extract for 20 minutes by 3000 x g. Continue to use the methanol phase and mix 2.5 mL with 20 mL PBS (represents 0.25 g).

Load the sample onto the ZeaCLEAN SMART column with a flow rate of 1.5 mL/min. Wash the column with 4 mL (20 %) Acetonitrile in HPLC-water. Dry the column by flushing air through it. Eluate by adding 400 µL of Acetonitrile. Keep in mind that the column bed is incubated with methanol for at least 5 minutes before the eluate will be collected.

In order to remove precipitations, filtrate the eluate through a PTFE filter after dilution with HPLC-water.

Inject the sample into the HPLC.

HPLC-Conditions
(Zearalenone)

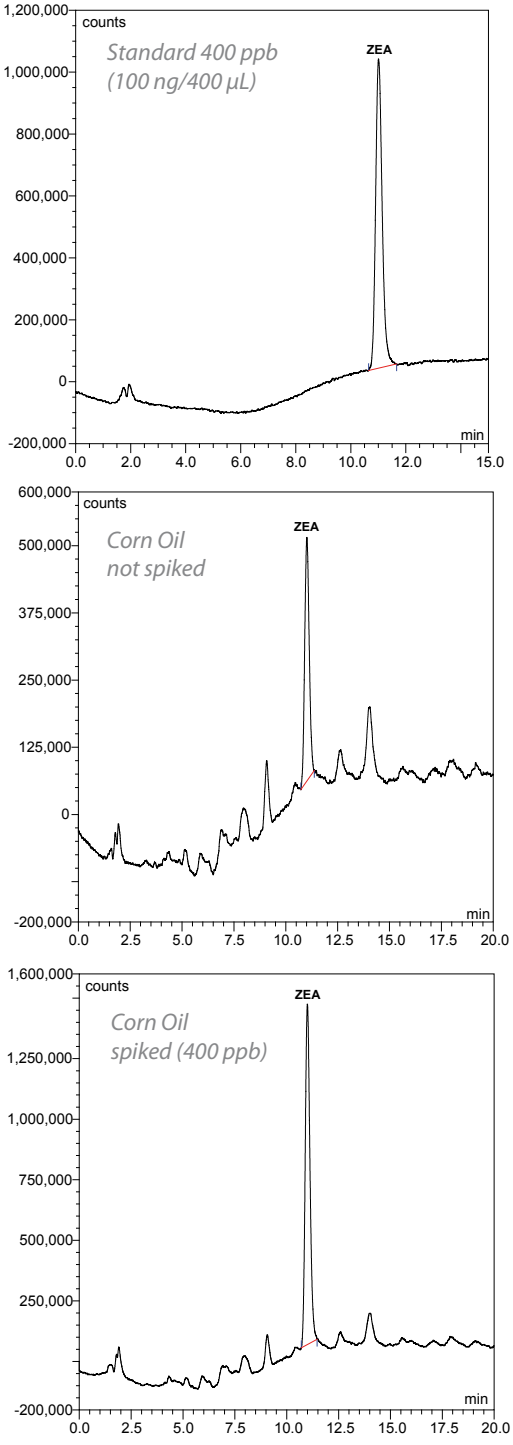
Column Oven	38 °C
HPLC-Column	150 x 4.6 mm; RP C18 (P/N 10522) Gard Column 8 x 4 mm (P/N 10523); + Gard Column Holder (P/N 10750)
Flow Rates	1.0 mL/min (75% A, 25% B); 0-18 min 1.0 mL/min (100% A, 0% B); 18-21 min 1.0 mL/min (75% A, 25% B); 21-26 min
Eluent A	Water/Acetonitrile 45/55 (contents 2% acetic acid (v/v))
Eluent B	Water/Acetonitrile 95/5 (v/v)
Fluorescence Detection	without Derivatisation
Excitation Wavelength	274 nm
Emission Wavelength	440 nm
Injection Volumina	10-100 µL

Recovery Rates
Content of Zearalenone in Corn Oil

Mycotoxin	**Zearalenone**
Standard*	100
Recovery Rates **Corn Oil, 400 ppb**	91

Standard is set = 100 %, **Corrected with non-spiked sample/
The results correspond to the performance specifications of EC 519 / 2014 (Section 4.3.1.1)

Chromatograms



These LCTech products were used:

ZeaCLEAN SMART, Affinity Columns
for Zearalenone P/N 14741

HPLC Column, RP C18 P/N 10522

Gard Column, 8 x 4 mm P/N 10523

Gard Column Holder P/N 10750

FREESTYLE ThermELUTE™, Robotic System for
fully Automated Sample Preparation P/N 12663, 12668

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