

SOLUTIONS BY



# Fully Automated Mycotoxin Analysis in the ppq Range FREESTYLE ThermELUTE™

### **FREESTYLE ThermELUTE™**

#### **Unique Automation**

The robotic system FREESTYLE ThermELUTE™ processes your samples fully automated from the raw extract to the ready chromatogram with highest sensitivity, e.g. for Aflatoxin M1 even in the range of ppq. The system analyses up to 500 samples per week in combination with any HPLC system using the unique technology of thermal denaturation. After washing, the immunoaffinity column is heated, which causes the bond between toxin and antibody to break up. The toxins, in form of a large-volume, aqueous eluate, are directly eluted into the HPLC sample loop via partial filling and analysed by the HPLC.

In the FREESTYLE ThermELUTE™ LCTech's SMART columns are used. These immunoaffinity columns have a size of only 3 cm but their performance is comparable to the standard 1 mL and 3 mL immunoaffinity columns. The SMART columns require significant less sample through miniaturisation of the overall process, less solvent and less time and thus save costs.

In the following we show some chromatograms processed using the protocol described below:

- Extraction and dilution are corresponding to the protocol of the SMART columns (incl. dilution of the sample with PBS-puffer before loading onto the column)

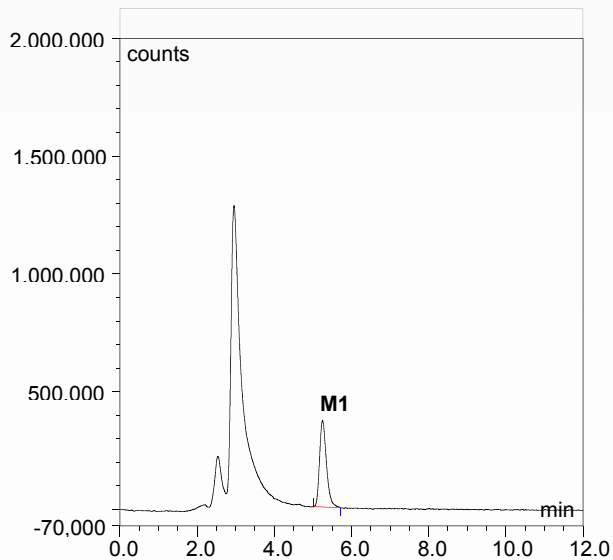
#### **Processing via FREESTYLE ThermELUTE™**

- Loading volume: 20 mL (milk / milk powder; extracted) with a flow rate of 1 mL/min. For the example shown below 10 mL milk were loaded onto the column.
- Washing volume: 4 mL with a flow rate of 1 mL / min.
- Heating time: 8 min with 98 °C

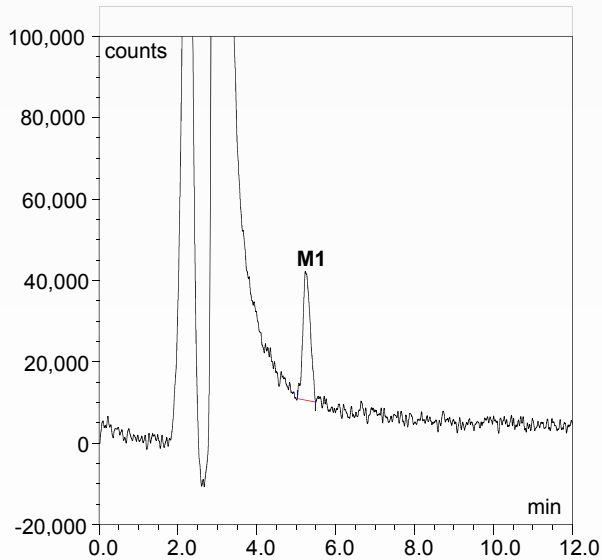
The following chromatograms were obtained with a Dionex 3400 RS detector. Please note that the achieved results always depend on the HPLC and detector used, respectively.

## Chromatograms

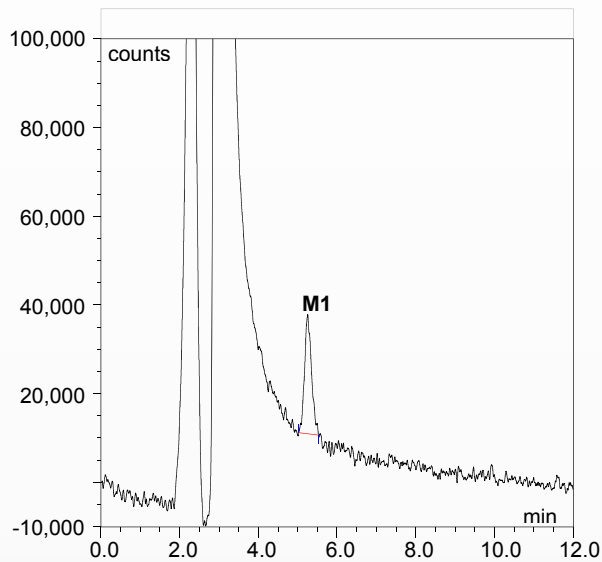
### Aflatoxin M1 cleaned-up with AflaCLEAN M1 SMART



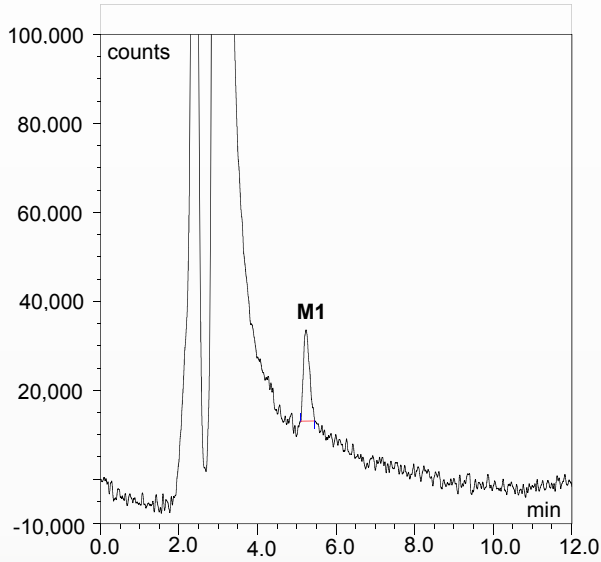
AflaCLEAN M1 SMART loaded with 100 pg/20 mL = represents 10 ppt



AflaCLEAN M1 SMART loaded with 10 pg/20 mL = represents 1 ppt

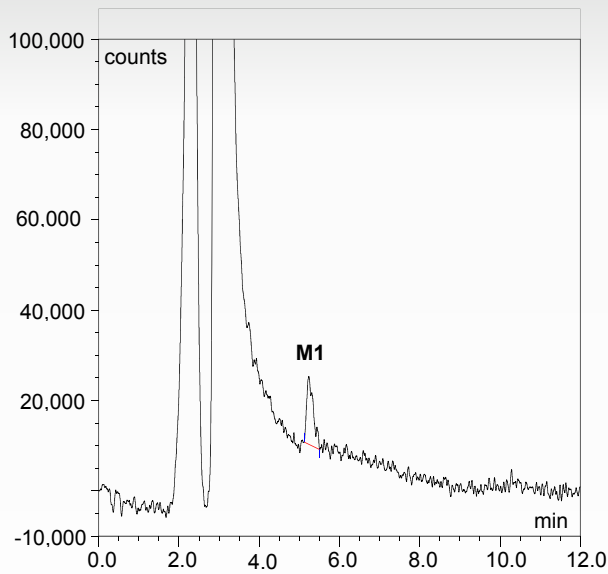


AflaCLEAN M1 SMART loaded with 8.8 pg/20 mL = represents 0.9 ppt



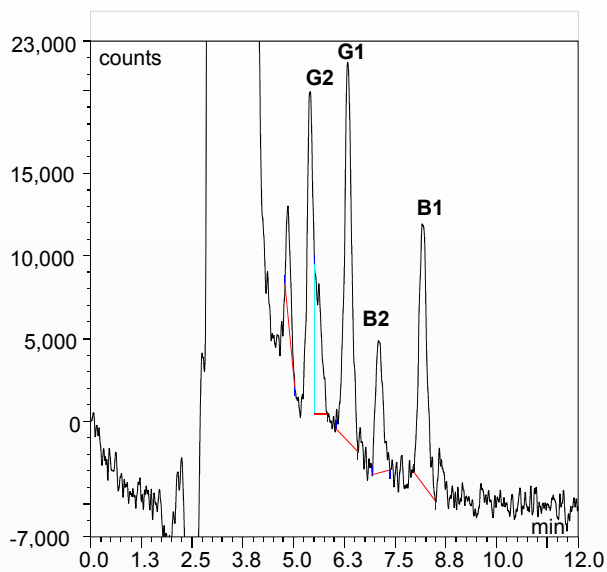
AflaCLEAN M1 SMART loaded with 7.5 pg/20 mL = represents 0.8 ppt

# RESULTS | AS012

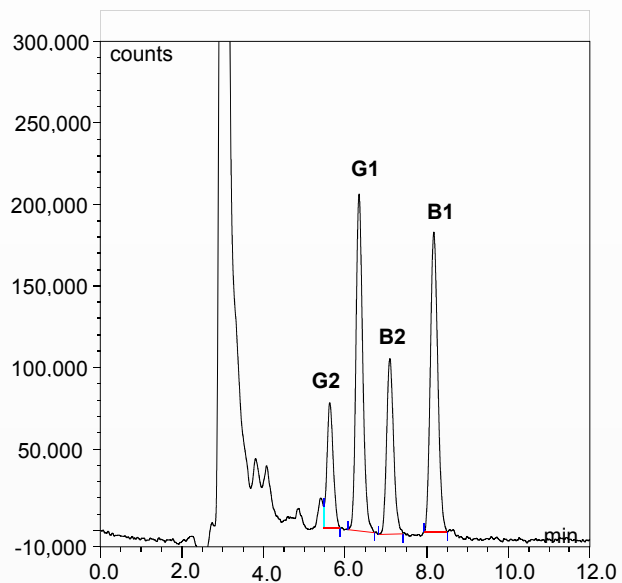


AflaCLEAN M1 SMART loaded with  
5 pg/20 mL = represents 0.5 ppt = 500 ppq

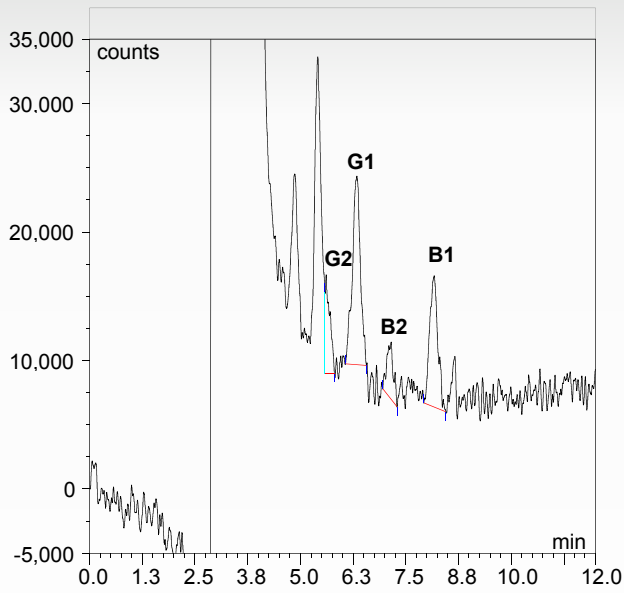
## Aflatoxins B/G cleaned-up with AflaCLEAN SMART



AflaCLEAN SMART loaded with  
0.05 ng/10 mL total toxin =  
17.9 ppt G2/B2 (referred to matrix);  
71.4 ppt B1/G1



AflaCLEAN SMART loaded with  
0.005ng/10mL total toxin =  
1.8 ppt G2/B2 (referred to matrix);  
7.1 ppt B1/G1



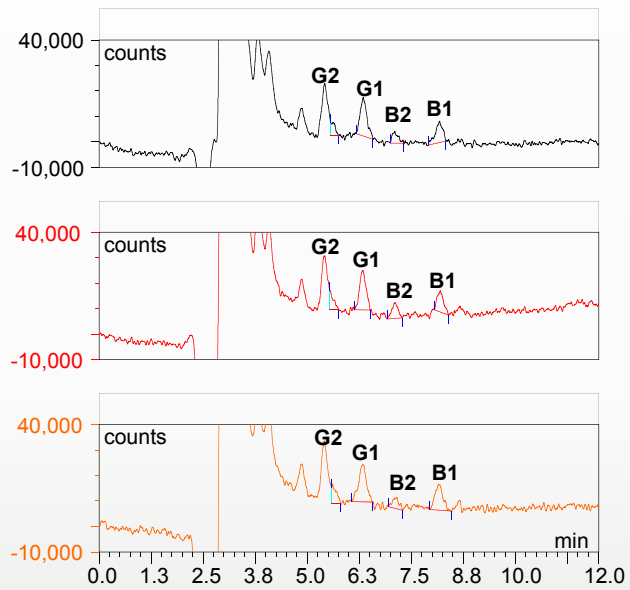
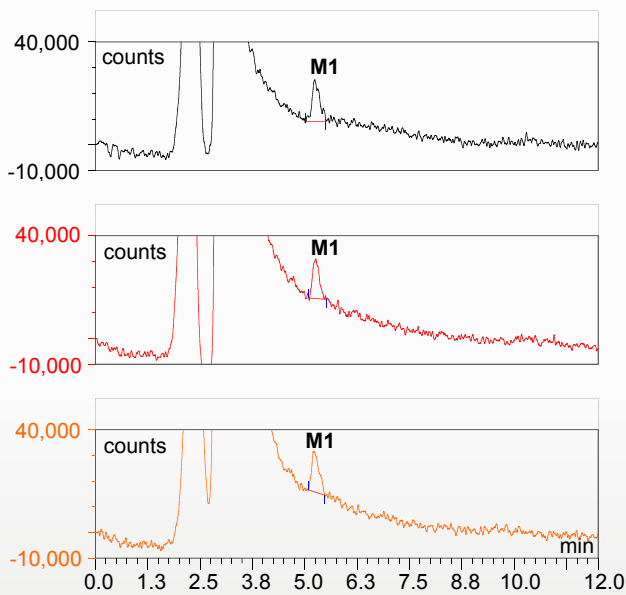
AflaCLEAN SMART loaded with  
 0.0025 ng/10 mL total toxin =  
 0.9 ppt G2/B2 (referred to matrix), 3.6 ppt B1/G1

## Reproducibility

To show the reproducibility of the results we consecutively processed three independent samples.

### Aflatoxin M1 with AflaCLEAN M1 SMART

### Aflatoxin B/G with AflaCLEAN SMART

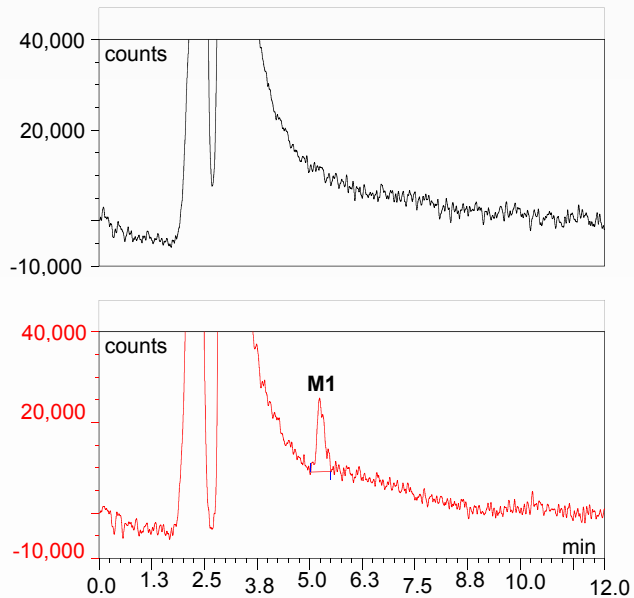


Comparison of three chromatograms from three different samples. These comparisons show the excellent reproducibility even in this very low measurement range.

## Sensitivity

In order to prove the sensitivity we cleaned-up a blind sample and a spiked sample and compared these two samples.

### Aflatoxin M1 with AflaCLEAN M1 SMART



Comparison of non spiked (blind sample), black and spiked sample with 500 ppq (red).  
→ very high sensitivity of M1.

**Contact**

LCTech GmbH  
Daimlerstraße 4  
84419 Obertaufkirchen  
Germany

Tel.: +49 8082 2717-0  
Fax: +49 8082 2717-100  
E-Mail: info@LCTech.de

[www.LCTech.de](http://www.LCTech.de)  
[www.LCTech-online.com](http://www.LCTech-online.com)

SOLUTIONS BY

