



June 2020

## Aflatoxin B/G and Ochratoxin A in Paprika and Chili Powder ~ Manual and Automated for LC-MS/MS with CrossTOX® ~

*Do you have a special matrix that we should test for mycotoxins? Please let us know and write an e-mail to: [info@LCTech.de](mailto:info@LCTech.de)*

### Sample Preparation

#### MYCOTOXINS

#### Paprika and Chili Powder

Even the Native Americans used paprika and chili powder not only to season various dishes, but also as a health-promoting remedy against osteoarthritis due to the ingredient capsaicin.

Even today, the spice is still used for supportive pain treatment such as lumbago or migraines. The high vitamin C content can even improve circulatory disorders.

Chili and Paprika are among the most Aflatoxin or Ochratoxin A investigated spices. They are susceptible to infection by mycotoxin producing fungi at every stage of cultivation, harvest and storage.

#### CrossTOX® Multi-Mycotoxin Column

The CrossTOX® columns by LCTech allow a high efficient sample clean-up of all regulated plus expected mycotoxins in a single step. At the same time, the columns improve the conventional dilute-and-shoot process via an QuEChERS based procedure:

- ✓ High purity of extracts due to special sorbents for high matrix binding; no separate filtration; no additional filtration necessary
- ✓ Significantly less internal standard required due to special affinity mechanism of the columns
- ✓ Less cleaning and maintenance of your LC-MS/MS system due to the high purity of the extracts
- ✓ Only one column for a wide range of matrices



The columns are suitable for both manual and automated processing.

## Processing Protocol

Homogenise 10 g of paprika/chili powder and extract the sample with 100 mL acetonitrile/water/acetic acid (84/15/1 (v/v)) and 50 mL n-hexane to remove essential oils and fats. For high extraction efficiency, continue the extraction for at least 10 minutes.

Filter the raw extract. A phase separation between n-hexane and acetonitrile-containing phase can be accelerated by centrifugation at 3000 x g for 5 minutes. Let pass 0.5 - 1 mL of the lower (n-hexane-free phase) slowly through the CrossTOX® column, collecting the cleaned sample using a GC-vial. A volume between 250 - 500 µL is sufficient to obtain a sample that contains a maximum depletion of matrix components.

### Recovery Rates

Content of Aflatoxin B1, B2, G1 and G2 in Paprika and Chili Powder

Aflatoxin	B1	B2	G1	G2
Standard*	100	100	100	100
Recovery Rate** Paprika and chili powder, 20 ppb (B1/G1/B2/G2 (8/8/2/2)) (n=6)	106	96	105	100

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

### Recovery Rates

Content of Ochratoxin A in Paprika and Chili Powder

	Ochratoxin A
Standard*	100
Recovery Rate** Paprika and chili powder, 20 ppb (n=6)	93

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

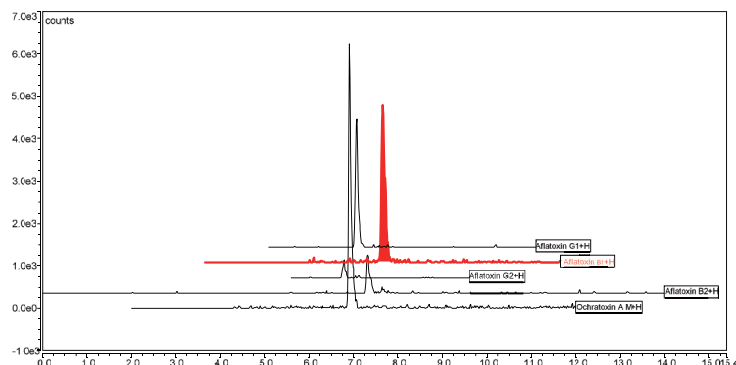
## HPLC-Conditions

Aflatoxine B/G and Ochratoxin A

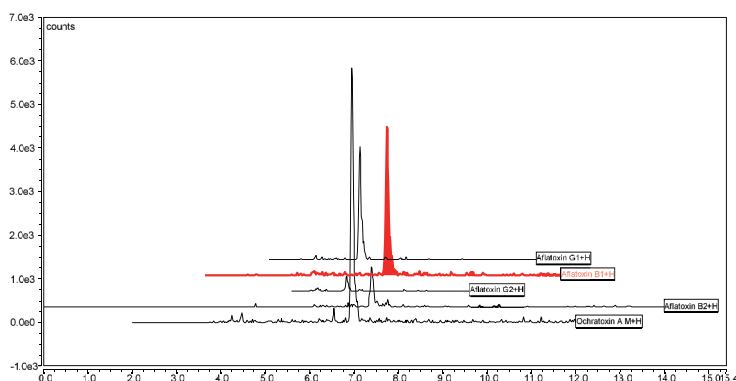
UPLC:	Gradient
Column Oven:	38 °C
Separation Column:	Accucore Biphenyl 100 mm x 2,1 mm; 2,6 µm with Defender Guard
Flow Rate/Eluent:	Eluent A): HPLC water/methanol (98/2 (v/v)) + 1 % acetic acid + 5 mM ammonium acetate Eluent B): HPLC water/methanol (2/98 (v/v)) + 1 % acetic acid + 5 mM ammonium acetate Flow rate 0.4 mL/min
Mass Spectrometry QQQ:	H-ESI (positive mode) For all analytes 1 quantifier and 3 qualifier ions were used, the settings depend on your MS device.



## Chromatograms

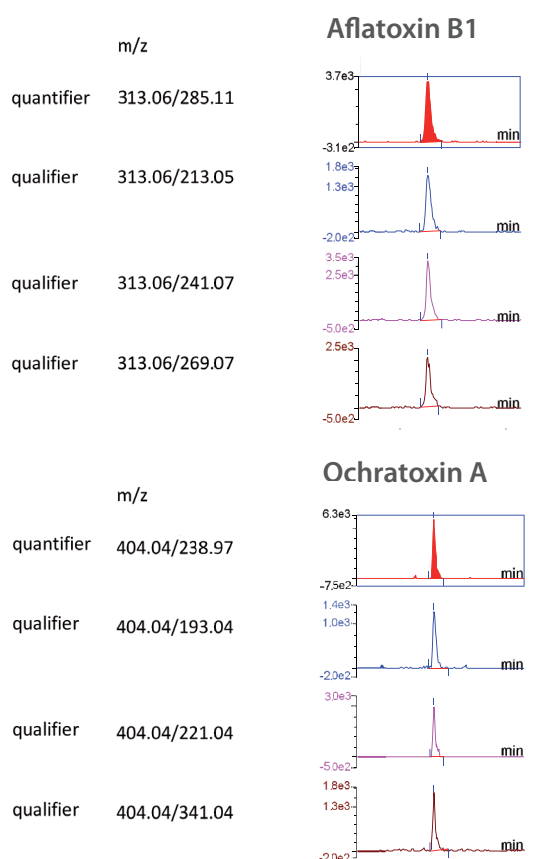


Standard chromatography of analyte-specific product-ions and their chromatographic Distribution (Aflatoxin B1 is marked red)



Chromatography of the CrossTOX® treated sample (Aflatoxin B1 is marked red)

## Spectrum for Aflatoxin B1 and Ochratoxin A of the Selected Qualifiers and Quantifiers



- ✓ Good, reproducible recovery rates
- ✓ Simple analytical evaluation
- ✓ Low workload for sample clean-up and fast and reliable sample analysis
- ✓ Reproducibility with lower standard consumption
- ✓ Without further impairment for the MS; robustness of the analysis is maintained longer

For more information on the automated sample clean-up via the robotic system FREESTYLE, please visit our website: [www.LCTech.de](http://www.LCTech.de).

### These LCTech Products were used:

Multi-Mycotoxin Column CrossTOX®  
P/N 17901 / 17902