



Mycotoxins in millet

Cleaned-up with *CrossTOX*[®]



The Millet

Millet is a collective name for small-fruited spelt cereals with 10 - 12 genera belonging to the sweet grass family. Already 8,000 years ago, millet was used to make dishes like unleavened flatbread. In Africa, millet is one of the staple foods along with rice, maize and wheat. In addition to producing food, the plant is used today as building material, for paper production and for brewing beer.

The plant is considered to be very rich in minerals: Besides fluorine, sulphur, phosphor, magnesium and potassium, millet contains particularly high levels of silicon (silicic acid), iron and vitamin B6 compared to other cereals. Incorrect storage conditions can cause certain mycotoxins to develop in the grain. Field fungi already produce mycotoxins during growth and fruit ripening. Since these are highly harmful to human and animal health in excessive quantities, tests are regularly carried out on cereals like millet.

All in One - From Aflatoxin to Zearalenone with *CrossTOX*[®]

Mycotoxins are natural, secondary metabolic products of various moulds with toxic effects. Since the clean-up of mycotoxins is of great importance today and therefore it is a good idea to test extracts for several mycotoxins in just one step, LCTech has developed the multi-mycotoxin clean-up column *CrossTOX*[®]. This column can be used for manual as well as automated processing with the *FREESTYLE* SPE robotic system.

LCTech's *CrossTOX*[®] columns enable highly efficient sample clean-up of regulated and expected mycotoxins. At the same time, they improve the conventional dilute-and-shoot application by a QuEChERS-like process. With the *CrossTOX*[®] column you are able to clean-up a wide range of different matrices.

Below you will find a processing protocol showing the use of a *CrossTOX*[®] column.

FREESTYLE SPE with Multi-Mykotoxin Säulen *CrossTOX*[®]





Processing Protocol

Homogenise 10 g of millet and extract the sample through 50 mL acetonitrile/water (84/15 (v/v) + 1 % acetic acid). Run the extraction for 5 to 10 minutes, depending on the device used, to achieve high extraction efficiency.

Subsequently, filtrate the raw extract or alternatively clarify it by centrifugation at 3000 x g for 5 minutes. Continue to use the resulting clear supernatant.

Load maximum 3 mL of the sample volume (for different matrices a maximum of 0.5 to 1 mL) onto a CrossTOX® column at a constant flow rate of 1 - 2 mL/min. Collect the flow through in a sample vial for analysis by LC-MS/MS.

Clean-up up to **18 analytes simultaneously!**
→ suitable for cereals, nuts, dried fruits,
animal feed and spices



These LC Tech products were used:

17900	CrossTOX® Column (manual)
17901	CrossTOX® Column (automated)
12663 / 12668	FREESTYLE SPE, Robotic System for Automated Sample Preparation

Conditions	
UPLC	gradient
Column Oven	38 °C
Separation Column	Accucore Biphenyl 100 mm x 2.1 mm; 2.6 µm with precolumn
Flow Rate, Eluent	0.4 mL/min; Eluent A: HPLC-water/methanol (98/2 (v/v), 5 mm ammoniumacetate, 1 % acetic acid) Eluent B: HPLC-water/methanol (2/98 (v/v), 5 mm ammoniumacetate, 1 % acetic acid)
0 - 2 min	95 % A; 5 % B
2 - 5 min	15 % A; 85 % B
5 - 11 min	5 % A; 95 % B
11 - 16 min	95 % A; 5 % B
Analytik	Heated ESI 3500 V (+); 1500 V (-); Ion-Transfer-Tube 325 °C; Vaporizer 350 °C

Recovery Rates**		
Analyte	Spiking Level (ppb)*	Millet
AFB1	8	99
AFB2	2	117
AFG1	8	88
AFG2	2	96
STC	500	104
OTA	15	98
ZEA	500	97
FB1	400	100
FB2	400	103
T2	50	100
H-T2	50	85
DON	1000	104
NIV	1000	106

*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).

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

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