Multi-Mycotoxin in Animal Feed
Clean-up with *CrossTOX®*

Sample Preparation Animal Feed

Despite heterogenous distribution of mycotoxins in raw materials and the regulation of maximum limits by law, the majority of the sample material is contaminated with more than one mycotoxin, which leads to massive economic loss for the respective agricultural business in the field of animal and fattening feeds (pig, poultry and cattle feed) as well as special feeds for rearing and performance enhancement. Not only performance losses are observed with diets high in mycotoxins, also the cost of veterinary medicines and alternative feeds is enormous.

A fast and matrix-deprivating sample cleanup in order to achieve a full compatible sample, which could be analysed easy, fast and reliable, this is the target of the CrossTOX® cartridge. The reduction of matrix interferences and a high matrix tolerance allow a accellerated cleanup and significant reduction of analytical costs (stadnards and downtime). A-must-have for a high sample throughput and an efficent multi-mycotoxin approach.

CrossTOX® – 18 mycotoxins at one go!

Due to its non-dispersive SPE material, the CrossTOX® column allows optimal separation of matrix interferences and interfering substances in order to feed the analytes to the measurement by LC-MS/MS. CrossTOX® is replacing the syringe filtration, which is otherwise mandatory upstream of an analytical measurement. With the CrossTOX® column, there is no increased effort for sample preparation, but a clean analysis result and a significant reduction of the maintenance effort on the LC-MS/MS.

Processing via *FREESTYLE QuEChERS*

The CrossTOX® columns are suitable for both manual and automated processing.

Catch them all - SMART

Aflatoxine B1, B2, G1, G2	Nivalenol
Ochratoxin A	3-Acetyl-DON
Zearalenon	15-Acetyl-DON
Deoxynivalenol	DON-3Glc
Fumonisine B1, B2	Sterigmatocystin
T-2, HT-2	Citrinin
	Diacetoxyscirpenol

LCTech

Processing protocol

Extract 20 grams of the respective feed by adding 100 mL of extraction solution (84% acetonitrile/15% water/ 1% acetic acid (v/v/v)). Extract for at least 10 to 30 minutes, depending on the extraction device. Filter the extract or sediment the insoluble components by centrifugation. Then, add 0.5 to a maximum of 3 mL of the liquid extract to the CrossTOX® column at a flow rate of 1 - 2 mL / min. The eluate of the CrossTOX® column can be measured directly by LC-MS/MS under the necessary instrument settings for the multitoxins.

Conditions	
UPLC	gradient
Column ofen	40 °C
Separation column	Accucore Biphenyl 100 mm x 2.1 mm; 2.6 µm with precolumn
Flow rate, Running medium	0.4 mL/min; Run A: HPLC water/methanol (98/2 (v/v), 5 mM ammonium acetate, 1% acetic acid) Run B: HPLC water/methanol (2/98 (v/v), 5 mM ammonium acetate, 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
Analytics	Heated ESI 3500 V (+); 1500 V (-); Ion-Transfer-Tube 325 °C; evaporator 350 °C.

Recovery rates

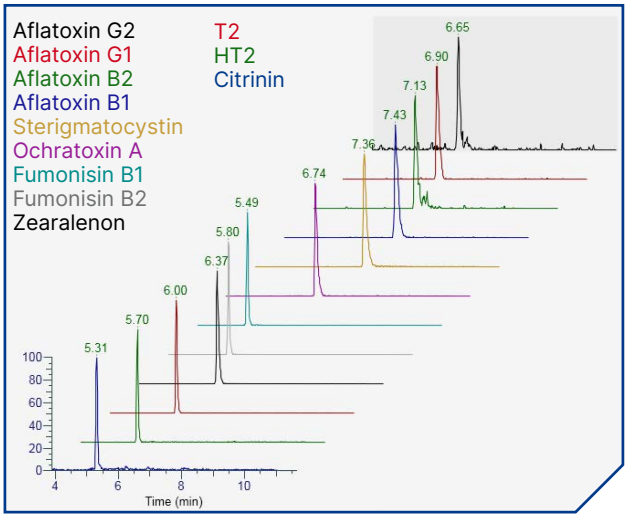
Analyt	Toxin content (ppb/ µg/Kg)	Chicken feed	Pigs fattening feed	Pig feed	concentrate dairy cows	Internal standard
Deoxynivalenol	1000	95	89	87	82	n.n.
Nivalenol	1000	96	73	90	82	n.n.
Fumonisin B1	2000	103	103	104	96	n.n.
Fumonisin B2	2000	102	101	101	101	n.n.
Zearalenon	100	93	90	85	86	n.n.
Aflatoxin G2	1	98	91	94	91	n.n.
Aflatoxin G1	4	100	94	94	58	n.n.
Aflatoxin B2	1	100	114	108	98	n.n.
Aflatoxin B1	4	92	93	88	99	n.n.
Sterigmatocystin	10	91	92	89	104	n.n.
T2	25	91	98	87	81	rec.
H-T2	25	93	96	91	83	rec.
Ochratoxin A	20	101	92	89	83	n.n.

* n.n. (not necessary) ** rec (recommended)

Conclusion

The CrossTOX® column makes difficult matrices, such as animal feed, which present a particular challenge for the extraction of mycotoxins due to a high protein content or fats, easily and efficiently accessible for LC-MS/MS analysis. Interfering matrix interferences are effectively removed.

Especially in the field of feed analysis, where numerous samples are often contaminated with more than one toxin, efficient, fast and instrument-friendly analysis is an advantage. The CrossTOX® column is not only suitable for sample preparation of feed, but also enables complex and difficult samples in the field of food analysis to be made accessible for multi-mycotoxin analysis.



Chromatogram for individual mycotoxins

This LCTech product was used:

17900 CrossTOX 100 per package

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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