Ochratoxin A in flour

Cleaned-up with *OtaCLEAN*

The flour

Flour is primarily the fine powder obtained from the grinding of cereal grains. People used the ground grain to produce food more than 100,000 years ago. Flour serves as the basis for a wide variety of foods and is therefore essential, especially in the food industry.

The best-known types of flour include wheat, rye and spelt flour. These are mainly used in cooking. In addition to cereals, various seeds such as quinoa or legumes like peas are also processed into edible flour. On the other hand, fish flour is used as an animal feed and bone flour as fertilizer. Incorrect storage conditons result in the formation of mycotoxins such as aflatoxins or ochratoxin A in grain, which can be the cause of poisoning. Since mycotoxins are highly harmful to human an animal health in excessive quantities, flours and grains are regularly tested for them.

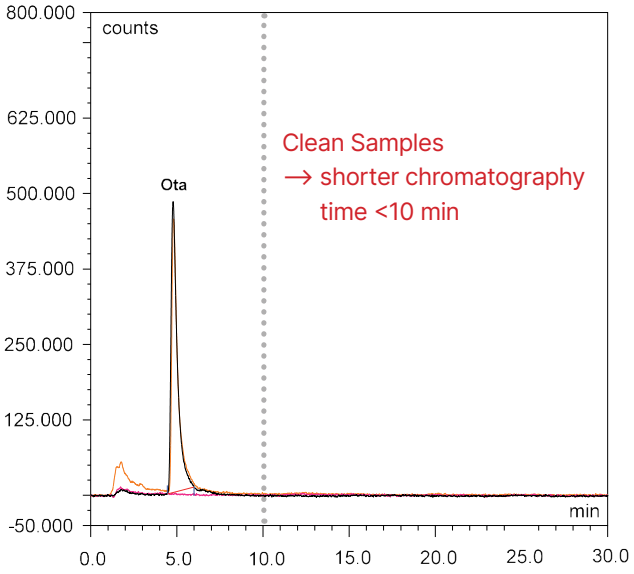
Fast and Efficient Clean-up Manual and Automated

Ochratoxin A is one of the most highly regulated mycotoxins and is formed by molds of the genus Aspergillus and Penicillium. Since mycotoxin clean-up is particularly important in the food and feed sector today, LCTech has developed a manual way to efficiently prepare samples with the OtaCLEAN immunoaffinity columns and an automated way with the FREESTYLE SPE robotic system. More samples in less time and high cost savings. Very good recoveries are also achieved with matrices such as flour. Any manual SPE method that has proven successful in your laboratory can be transferred directly to the robotic system. Already created methods can be saved and reused, but also modified.

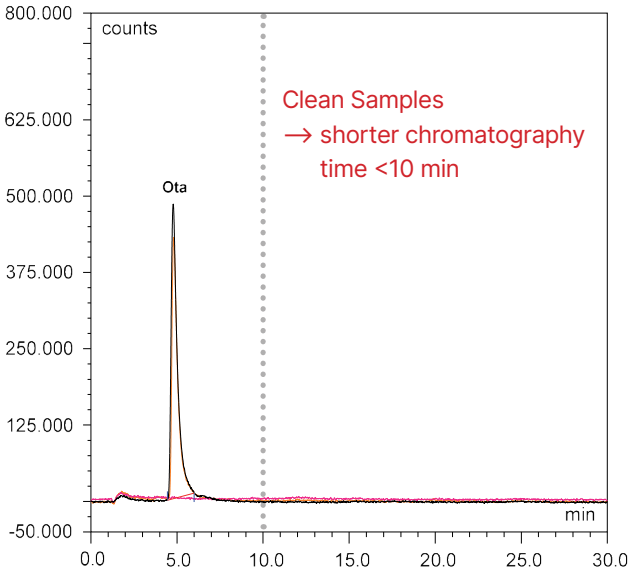
Processing protocol

Extract 10 g of flour through 50 mL methanol/water (80/20 (v/v)). Perform the extraction between 3 and 10 minutes to obtain high extraction efficiency. Filtrate the raw extract and dilute 10 mL of it with 40 mL of PBS. Remove precipitates by filtration to prevent column clogging and concentration of matrix components above the column bed. Load 25 mL of the diluted sample onto an immunoaffinity column OtaCLEAN to quantitatively bind the Ochratoxin A. Then wash the column with 10 mL of deionized water. Use the wash solution to rinse the template tube and then the OtaCLEAN column. Elute the column with 2 mL of methanol after short drying time. Make sure that the methanol incubates into the column bed for 5 min to ensure complete denaturation of the antibodies.

Chromatograms



Black: Standard, 10 ng/2 mL (equivalent to 10 ppb) Ota
Red: Wheat flour 405, not spiked
(cleaned-up with OtaCLEAN)
Orange: Wheat flour 405, 10 ppb spiked
(cleaned-up with OtaCLEAN)



Black: Standard, 10 ng/2 mL (equivalent to 10 ppb) Ota
Red: Biscuit flour, not spiked
(cleaned-up with OtaCLEAN)
Orange: Biscuit flour, 10 ppb spiked
(cleaned-up with OtaCLEAN)

Recovery rates

Content of Ochratoxin A in flour	
Mycotoxin	Ochratoxin A
Standard*	100
Recovery Rate** Einkorn (Triticum monococcum), 10 ppb	93
Recovery Rate** Wheat flour 405, 10 ppb	94
Recovey Rate** Biscuit flour, 10 ppb	88

* Standard was set = 100% set
** Corrected with non-spiked sample / The results are in accordance with the performance specifications of EC 401 / 2006 (section 4.3.1).

Conditions

HPLC	Isocratic
Column oven	40 °C
Separation column	RP EC 125/3 nucleosil 120-3 C18
Flow rate / Eluent	0.6 mL/min; HPLC-water/methanol/acetonitrile (40/55/5 (v/v/v) + 1% acetic acid)
Fluorescencedetection	Without derivatization
Excitation wavelength	335 nm
Emmission wavelength	465 nm

These LCTech products were used:

10515 / 11535 OtaCLEAN

12663 / 12668 FREESTYLE SPE, Robotic System for Automated Sample Preparation

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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