

News On Food

2014 Volume 4

Special Edition on Mycotoxins



Mycotoxin ELISA Test Kits

Enzyme linked immunoadsorbent assay (ELISA) is the most popular immunologically based method used in test kits for the analysis of mycotoxins in food and feeds. A commonly used approach is a competitive assay where a known amount of labeled toxin competes with any possible toxin in the sample for the specific antibodies attached to the reaction vessel. Any unbound toxin is then washed from the vessel. The quantification is dependent upon the amount of enzyme labeled toxin remaining in the vessel to react with the substrate for the enzyme. This reaction results in a colored product that can be measured optically.

Sigma-Aldrich® has just launch a comprehensive range of 16 ELISA kit products covering all major mycotoxins categories. This range is complementary to our analytical chromatography offering to quantify mycotoxins

- Very rapid and highly sensitive tests (30-90 minutes)
- Limits of detection down to 5 ppt
- Cost effective compared to other tests on a cost per test basis
- No matrix effects

Discover our range of ELISA kits for mycotoxins, meat species determination and gluten detection on sigma-aldrich.com/elisa

Mycotoxin ELISA test kits are easy to use and have high throughput and sensitivity. Dedicated kits are available for difficult matrices such as milk.

Cat. No.	Designation	Matrices	Format
SE120001-1KT	Rapid Aflatoxin B1 ELISA Kit	Grains, Cereals, Nuts, Cottonseeds, Animal Feeds	96-tests
SE120002-1KT	Aflatoxin B1 Low Matrix ELISA Kit	Baby Formulas, Oils, Nuts, Etc..	96-tests
SE120003-1KT	Rapid Aflatoxin M1 ELISA Kit	Milk and Dairy Products	96-tests
SE120004-1KT	High Sensitivity Aflatoxin M1 ELISA Kit	Milk and Dairy Products	96-tests
SE120005-1KT	Aflatoxin M1 ELISA Kit For Urine	Urine	96-tests
SE120006-1KT	Total Aflatoxin ELISA Kit	Grains, Cereals, Nuts, Animal Feed	96-tests
SE120007-1KT	Total Aflatoxin ELISA Kit L Matr (Quan.)	Grains, Cereals, Nuts, Animal Feed	96-tests
SE120008-1KT	Total Aflatoxin ELISA Kit L Matr (Qual.)	Grains, Cereals, Nuts, Animal Feed	96-tests
SE120009-1KT	Deoxynivalenol ELISA Kit	Grains and Cereals, Animal Feed	96-tests
SE120010-1KT	Fumonisin ELISA Kit	Maize (Corn)	96-tests
SE120011-1KT	Ochratoxin a ELISA Kit for Alcoholic Bev	Wine, Grapes Juice, Grape Must, Beer	48-tests
SE120012-1KT	Ochratoxin a ELISA Kit	Coffee, Cocoa, Cocoa Butter and Spices	96-tests
SE120013-1KT	Ochratoxin a ELISA Kit	Human and Animal Milk, Serum, Urine and Plasma	96-tests
SE120014-1KT	Ochratoxin a ELISA Kit	Grains and Cereals, Animal Feeds	96-tests
SE120015-1KT	Ochratoxin a ELISA Kit for Wine	Wine, Grapes Juice, Grape Must	96-tests
SE120016-1KT	Zearalenone ELISA Kit	Corn, Barley, Oats, Wheat, Rice, Sorghum	96-tests

New Mycotoxins standards from Fluka®

We are continuously increasing our range of mycotoxins standards. Because LC-MS systems are being used more frequently, we have decided to focus on labelled standards. The following is a list of our new products.

Cat. No.	Description
32245	Ochratoxin A-(phenyl-d ₅) solution, 10 µg/ml in acetonitrile
32244	Tenuazonic acid-(acetyl- ¹³ C ₂), mixture of diastereomers solution, 50 µg/ml in acetonitrile, 1:1 mixture of (5S,8S) and (5R,8S)-diastereomers
32192	Nivalenol- ¹³ C ₁₅ solution
32193	Zearalanone solution, 10 µg/ml in acetonitrile

See our comprehensive list of mycotoxins standards on sigma-aldrich.com/mycotoxins

New TraceCERT® Mycotoxins Certified Reference Material from SUPELCO®

These certified reference materials (CRM) are produced and certified in accordance with ISO Guide 34:2009 and ISO/IEC 17025:2005. All information regarding the specifications of these CRMs can be found on the Certificate of Analysis

Cat. No.	Description
CRM44647	Aflatoxin B1 – 20µg/mL in methanol, ampule of 1 mL
CRM46319	Aflatoxin M1 solution – 10 µg/mL in acetonitrile, ampule of 1 mL
CRM46303	Aflatoxin Mix – in methanol (varied conc.), ampule of 1 × 5 mL
CRM46323	Aflatoxin B1 solution – 3 µg/mL in benzene:acetonitrile (98:2), ampule of 1 mL
CRM46325	Aflatoxin G1 solution 6 – µg/mL in benzene:acetonitrile (98:2), ampule of 1 mL
CRM46324	Aflatoxin B2 solution – 3 µg/mL in benzene:acetonitrile (98:2), ampule of 1 mL
CRM46326	Aflatoxin G2 solution – 3 µg/mL in benzene:acetonitrile (98:2), ampule of 1 mL
CRM46911	Deoxynivalenol – 200 µg/mL in ethyl acetate: methanol (95:5), ampule of 1 mL
CRM40139	Japanese Aflatoxin Mixture – 25 µg/mL in acetonitrile, ampule of 5 × 1 mL
CRM46912	Ochratoxin solution – 50 µg/mL in benzene: acetic acid (99:1), ampule of 1 mL
CRM46914	Patulin solution – 100 µg/mL in chloroform, ampule of 1 mL

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We have introduced NEW technology bulletins to offer further information on specific capabilities and product ranges available from Sigma-Aldrich:

- News On Air – Air Monitoring Bulletin detailing innovative and high technology products available for gas/air sampling techniques
- News On Food – Food & Beverage Analysis Bulletin featuring techniques and methods for food analysis
- News On Water – Water Analysis Bulletin detailing techniques for sampling and analysis in environmental applications

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A new Molecular Imprinted Polymer for the Extraction of Patulin

The mycotoxin patulin is often found in rotten apples. It is mostly produced by *Aspergillus*, *Penicillium* and *Byssoschlamys* and shows a variety of short- and long-term effects in animal studies, ranging from gastrointestinal problems and neurotoxicity to genotoxicity and teratogenicity. Therefore, many countries set limits for patulin contents in apple products. For a precise detection of patulin, Sigma-Aldrich offers NEW SPE cartridges for purification and a comprehensive range of analytical standards.

Historically, analytical methods for patulin have employed liquid-liquid extraction (LLE) followed by HPLC separation with UV detection at 276 nm. Researchers have highlighted problems with these methodologies, including

- Tedious sample preparation associated with liquid-liquid extraction
- Patulin instability in alkaline conditions resulting from sodium carbonate cleanup
- The requirement of extra cleanup or chromatographic method development to prevent the coelution of patulin and interfering matrix component 5-hydroxymethylfurfural (HMF).

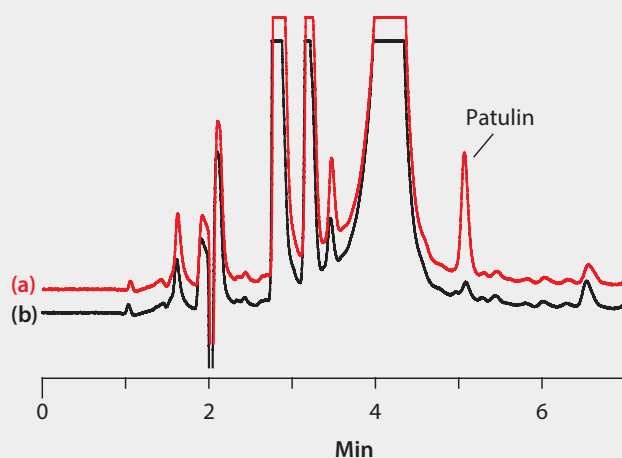
Therefore, a quick, simple and robust sample preparation method for patulin analysis is needed. To propose an accurate solution, Supelco has developed a method based on the technology of molecularly imprinted polymers. These SupelMIP® SPE Patulin extraction cartridges selectively clean and concentrate Patulin prior to analysis by HPLC.

Featured and Related Products

Product Description	Cat. No.
SupelMIP® SPE Product	
Patulin Tube, 3 mL, 50 ea	52776-U
Ascentis Express HPLC Column	
C18, 15 cm x 2.1 mm I.D., 2.7 µm particles	53825-U
Analytical Solvents	
Acetonitrile, CHROMASOLV® Plus, for HPLC, ≥99.9%	34998
Diethyl Ether, CHROMASOLV®, for HPLC, ≥99.9%	309966
Ethyl Acetate, CHROMASOLV® Plus, for HPLC, ≥99.9%	650528

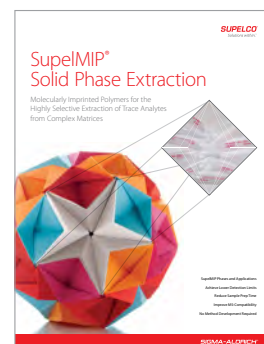
Figure 1. Chromatogram of apple juice after SPE cleanup (a) spiked at 50 ng/mL with patulin and (b) with no patulin spike.

Column: Ascentis® Express C18, 15 cm x 2.1 mm, 2.7 µm particles (53825-U)
 Mobile Phase: (A) 95:5 water:acetonitrile; (B) 100% acetonitrile
 Gradient: Hold at 100% A for 6 min; 0% to 80% B in 0.1 min; hold at 80% B for 3 min, 80% to 0% B in 0.1 min, hold at 100% A for 13 min
 Flow Rate: 0.2 mL/min.
 Column Temp.: 30 °C
 Detector: UV (276 nm)
 Injection: 10 µL



This MIP phase SPE procedure yielded high analyte recovery with excellent reproducibility. The average recovery of patulin was calculated to be 84% with a relative standard deviation (RSD) of 2%.

For more information on Molecular Imprinted Polymers and to request our free brochure please connect on:
sigma-aldrich.com/supelmip



The Tube Mill control – Disposable system

The Tube Mill control is a batch mill for grinding soft, fibrous, hard and brittle materials (Mohs hardness up to five). The transparent grinding chamber and cover facilitate observation at all times. It is convenient and safe to use, while assuring high safety and reproducibility, to cover a broad range of applications. Amongst other applications, the mill is suitable for grinding seeds, such as corn and wheat. The ability to cool the sample with dry ice expands applications tremendously.

The Tube Mill control is “Patent Pending”, designed and manufactured exclusively by IKA.

- Disposable grinding chamber
- Cross-contamination free
- No cleaning required
- Precise milling results
- Large application range



Cat. No.	Description
Z740151-1EA	IKA Tube Mill control, 230 V GB Plug
Z740153-1EA	IKA Tube Mill control, 230 V EURO Plug
Z740154-10EA	IKA Tube Mill control disposable grinding chamber

After grinding, a part of the sample will be analyzed. The remaining sample can either be discarded or it can be stored as a reference sample directly in the grinding chamber. In the later case, grinding chambers can be labeled and either stored in a refrigerator or in a drying room. Reference samples can be re-analyzed and traced at any time.



The IKA Tube Mill design means that no clean-up is needed between two samples, giving additional cost and time savings. Excess sample can be more safely kept.

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