VICAM®

A Waters Business

AflaTest® ▪ AflaTest® WB ▪ AflaTest WB SR ▪ Afla-V®

Mycotoxin Analysis in Tree Nuts

Mycotoxins are naturally occurring toxic substances produced by soil-borne molds that can infect a wide variety of crops. Aflatoxins, the most extensively studied mycotoxin, are a Group 1 carcinogen proven to cause cancer in humans. The molds that produce aflatoxins can infect nuts while they're on the tree as well as during post-harvest processing, transportation, and storage.

In recent years, stringent legal limits on aflatoxin levels in tree nuts, which can be variable depending on the region (see Table 1), have threatened the profitability of growers, handlers, and traders worldwide. The high susceptibility of tree nuts to contamination by aflatoxins is a fact of nature. And while it's virtually impossible to eliminate these contaminants from the environment, you can protect the marketability of your products from their potentially devastating impact by implementing a rational aflatoxin surveillance program. Frequent testing is not only cost-effective business insurance, but also a socially responsible corporate policy that helps protect the health of customers and the livelihoods of industry stakeholders.

Whether you need to rapidly screen shipments onsite or perform precise trace analysis of mycotoxins in the lab, VICAM aflatoxin test kits deliver unparalleled levels of accuracy, reliability, and efficiency by fluorometer, strip test, HPLC or UPLC® analysis. VICAM's test systems provide customers with sensitive results ensuring products are free of contamination every step of the way.

VICAM solutions enable you to:

- Obtain accurate, precise results on-time, every time with AflaTest®, AflaTest® WB, AflaTest WB SR or Afla-V®
- Manage exports with confidence with results at or below US FDA and EU regulations

Table 1: Maximum levels for aflatoxin B_1 and total aflatoxins in ready-to-eat tree nuts in select regions*. Maximum aflatoxin levels and the complexity of standards vary from country to country posing a challenge for exporters.

Region	Aflatoxin B_1 (ppb)	Total aflatoxins (B_1+ B_2+G_1+G_2) (ppb)
EU	Almonds, pistachios: 8 Hazelnuts, Brazil nuts: 5 All other nuts: 2	Almonds, pistachios, hazelnuts, Brazil nuts: 10 All other nuts: 4
US	All nuts: 20	All nuts: 20
Australia	Almonds, hazelnuts, pistachios: 10	All nuts: 15
Brazil	All nuts: 10	All nuts: 10
India	All nuts: 30	All nuts: 30
China	Peanuts: 20 All other nuts: 5	All nuts: 20
Korea	All nuts: less than 10	All nuts: 15
South Africa	All nuts: 15	All nuts: 15
Vietnam	Almonds, hazelnuts, pistachios: 10	All nuts: 15

**Comprehensive data on aflatoxin and other mycotoxin limits in these and other commodities and countries around the world are available from VICAM's Global Mycotoxin Regulations Tool. <www.commodityregs.com>*

Rapid, Accurate Methods for Tree Nuts Mycotoxin Testing

VICAM's comprehensive portfolio of aflatoxin testing solutions brings versatile and practical testing capabilities to your business and laboratory. With the speed to isolate toxins in less than 10 minutes and the sensitivity to detect at low parts-per-billion levels, our technologies can help ensure the safety of your tree nuts products.

AflaTest

AflaTest is a quantitative method for the detection of aflatoxin in tree nuts. VICAM's advanced biotechnology permits the measurement of aflatoxins (including AFB_1, AFB_2, AFG_1, AFG_2 and AFM_1). The AflaTest mycotoxin testing system can be used in a wide variety of locations from the local farm elevator to food processing quality control laboratories to government testing laboratories.

BENEFITS

- ***Durable*** – Long shelf life; requires no refrigeration
- ***Versatile*** – Can be used with a variety of samples
- ***Convenient*** – For use with fluorometer, HPLC and UPLC
- ***Easy*** – No special skills required
- ***Quick*** – Less than 10 minutes to isolate toxin
- ***Safe*** – Requires less toxic materials than other methods

AflaTest WB

AflaTest WB is an HPLC-only test for the detection of aflatoxins B_1, B_2, G_1, G_2 and M_1 using wide bore immunoaffinity columns. With a total volume of 3 mL, AflaTest WB allows for a faster flow rate preferred by many laboratories and is the ideal cleanup step for any HPLC. AflaTest WB can be used in a wide variety of locations from the field to food QC and safety laboratories.

BENEFITS

- ***Durable*** – Long shelf life; requires no refrigeration
- ***Versatile*** – Can be used with a variety of samples
- ***Exclusive*** – Specifically for HPLC or UPLC use
- ***Quick*** – 10 minutes to isolate toxin
- ***Wide range*** – Detects levels as high as 500 ppb
- ***Fast flow*** – Passes more volume over the column

AflaTest WB SR

AflaTest WB SR is a quantitative method that uses immunoaffinity chromatography to selectively isolate aflatoxins B_1, B_2, G_1, G_2 and M_1 for HPLC analysis. The SR test kit's fast-flow widebore columns are specially designed to maximize aflatoxin G_2 recovery and accelerate sample throughput. AflaTest WB SR can be used in a wide variety of locations from the farm elevator to food QC and safety laboratories.

BENEFITS

- ***Powerful*** – Designed exclusively for laboratory use
- ***Enhanced recovery*** – Improved aflatoxin G_2 recovery
- ***Comprehensive*** – Determines individual aflatoxin levels (B_1, B_2, G_1, G_2, and M_1)
- ***Durable*** – Long shelf life; requires no refrigeration
- ***Versatile*** – For use with a variety of samples
- ***Quick*** – 15 minutes to isolate toxin*
- ***Wide range*** – Detects total aflatoxin levels as high as 500 ng and as low 0.005 ng for total aflatoxin
- ***Fast flow*** – Passes more volume over the column

**excluding preparation and extraction*

Afla-V

Afla-V test strips utilize the proven sensitivity and selectivity of VICAM's monoclonal antibodies to accurately detect and measure total aflatoxins B_1, B_2, G_1, and G_2 at levels as low as 2.5 ppb and as high as 100 ppb. The single-dilution sample preparation procedure saves time and materials, and the test takes 5 minutes* to develop. Digital readings are clearly displayed on the screen of the Vertu® Lateral Flow Reader, eliminating any guess work about the results.

BENEFITS

- ***Fast screening*** – Results in 5 minutes*
- ***Simple*** – No special training required
- ***Sensitive*** – Limits of detection as low as 2.5 ppb
- ***Convenient*** – Easily performed onsite or in the lab. No incubation
- ***Durable*** – Long shelf life
- ***Accurate*** – Real-time data which can be printed or downloaded to a computer
- ***Wide range*** – 0 to 100 ppb

**after extraction*

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Try our Mycotoxins Regulations Tool at **www.commodityregs.com**

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Subject to change without notice.

The analytical methods presented in this data sheet have been researched and developed by VICAM to be used exclusively with AflaTest, AflaTest WB, and Afla-V products. These methods have been validated in the VICAM laboratories to perform to the specifications indicated in the AflaTest, AflaTest WB, and Afla-V products. The user assumes all risk in using AflaTest, AflaTest WB, and Afla-V products. VICAM makes no warranty of any kind, expressed or implied, other than that AflaTest, AflaTest WB, and Afla-V products conform to VICAM printed specification and quality control standards. VICAM will, at its option, repair or replace any product, or part thereof, which proves to be defective in workmanship or material. VICAM's undertaking to repair or service such products is exclusive and is in lieu of all other warranties whether written, oral, expressed, or implied, including any implied warranty of merchantability or fitness for a particular purpose. VICAM shall have no liability for anticipated or lost profits or any loss, inconvenience or damage whether direct, indirect, incidental, consequential or otherwise, to person or property, or for strict liability or negligence arising from or in connection with the use of these assay procedures or AflaTest, AflaTest WB, and Afla-V products.

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