



Mycotoxins Test

Key Clinical Messages

What is the Mycotoxins Test?

The Mycotoxins test is a urine test that measures mycotoxin excretion in urine.

Mycotoxins are toxic compounds naturally produced by certain types of molds. Molds that produce mycotoxins can grow on food (cereals, coffee, dried fruit, nuts, spices) or on water-damaged building materials.

Mold growth on food can occur before or after harvest, during storage, or on/in the food itself, often under warm, damp, and humid conditions. Oral exposure to mycotoxins occurs either directly by eating infected food or indirectly from animals that consume contaminated feed (e.g., milk).

Most mycotoxins are chemically stable and survive food processing. Another route of exposure can occur through inhalation of airborne mycotoxins from residential or occupational water-damaged buildings.¹

Why Order Mycotoxin Testing?

Mycotoxin exposure can potentially contribute to a myriad of health harms. Mycotoxins are recognized to have direct allergenic, inflammatory, carcinogenic, and immunomodulatory effects. Respiratory issues such as sinusitis and asthma may occur following mycotoxin inhalation exposures.

Gastrointestinal damage has been routinely documented following high-dose exposure to mycotoxins via oral consumption. The link between aflatoxin exposure and increased risk of hepatocellular carcinoma is well established, and several other mycotoxins demonstrate carcinogenic potential.

Growing evidence indicates mycotoxins can exacerbate conditions of immune dysregulation, such as Hashimoto's thyroiditis, connective tissue disorders, celiac disease, and other autoimmune conditions, especially in those who have pre-existing immune dysregulation.

Furthermore, ongoing studies investigate associations between mycotoxin burden and neurological issues such as Parkinson's disease, ALS, and other neurological or neuropsychiatric conditions.²

Individuals most at risk for mycotoxin exposure include those who:

- Live or work in older buildings
- Have known exposure to water-damaged buildings
- Have impaired immune responses or higher levels of oxidative stress





What Markers Are Included on Vibrant’s Mycotoxins Test?

Vibrant’s Mycotoxins test includes 29 of the most common mycotoxins produced by common molds.

| 5 Aflatoxins | |
|--------------|--------------|
| Aflatoxin B1 | Aflatoxin G2 |
| Aflatoxin B2 | Aflatoxin M1 |
| Aflatoxin G1 | |

| 13 Other Mycotoxins |
|---------------------|
| Chaetoglobosin A |
| Citrinin |
| Dihydrocitrinone |
| Enniatin B1 |
| Fumonisin B1 |
| Fumonisin B2 |
| Fumonisin B3 |
| Glutotoxin |
| Mycophenolic Acid |
| Ochratoxin A |
| Patulin |
| Sterigmatocystin |
| Zearalenone |

| 11 Trichothecenes |
|--------------------|
| Deoxynivalenol |
| Diacetoxyscirpenol |
| Nivalenol |
| Roridin A |
| Roridin E |
| Roridin L2 |
| Satratoxin G |
| Satratoxin H |
| T-2 Toxin |
| Verrucarin A |
| Verrucarin J |

Which Patients Benefit from This Test?

Conditions, signs, and risks associated with mycotoxin exposure:

- Fatigue and weakness
- Chronic burning in the throat and nasal passages
- Coughing, wheezing, and shortness of breath
- Loss of balance
- Depression and/or anxiety
- Skin rashes
- Eye irritation or tearing of the eyes
- Headache and/or light sensitivity
- Hearing loss
- Heightened sensitivity to chemicals and foods
- Irregular heartbeat
- Morning stiffness and/or joint pain
- Muscle weakness
- Sleep problems
- Poor memory, difficulty finding words
- Slower reaction time
- Vision changes
- Difficulty concentrating
- Abdominal pain, diarrhea, and/or bloating
- Unusual skin sensations, tingling, and numbness
- Increased urinary frequency or increased thirst
- Disorientation and/or dizziness
- Static shocks or metallic taste in the mouth

Which Tests Pair Well with the Mycotoxins Test?

- **Environmental Toxins** – to investigate and reduce total toxin burden.
- **Heavy Metals** – to investigate and reduce total toxin burden.
- **Candida + IBS Profile** – to assess for fungal infection or mold-induced hypersensitivity.
- **Hepatic Function Panel** – to investigate liver function, which impacts detoxification and elimination.
- **Renal Function Panel** – to investigate kidney function, which impacts detoxification and elimination.
- **Hormones (Serum, Saliva, Urine)** – to investigate mycotoxin impact on endocrine and reproductive symptoms.
- **Gut Zoomer** – to investigate:
 - Fungal, bacterial, and viral dysbiosis
 - Intestinal hyperpermeability, bile acids, and/or elevated beta-glucuronidase, which can impact detoxification and elimination
- **Wheat Zoomer** – to investigate intestinal hyperpermeability.
- **Thyroid panel** – to screen for endocrine disruption of thyroid hormones or thyroid autoimmunity.
- **Connective Tissue Panel** – to screen for connective tissue disease, which is associated with higher risk of opportunistic fungal infection.
- **Neural Zoomer Plus** – to investigate neurologic autoimmune disorders.
- **Inflammation Panel** – to investigate markers of inflammation.

Test Prep

Fasting: Fasting is not required, however, it may increase the excretion of toxic chemicals from adipose tissue.

Collection: One urine specimen tube.

Hydration: Do not drink more than 8 oz of water one hour prior to urine collection. The sample may be rejected if the urine is too dilute.

Diet: No restrictions.

Reference Ranges

Reference ranges were determined using urine samples from 1000 apparently healthy individuals. Results in GREEN correspond to the 0-75th percentile, results in YELLOW correspond to the 75th-95th percentile, and results in RED correspond to those greater than the 95th percentile of the reference range.

Provocation

The Mycotoxins test references ranges were validated in unprovoked populations. Provoked levels cannot be inferred from unprovoked levels (i.e., "How different would the results be if I used provocation?"). Likewise, unprovoked levels cannot be inferred from provoked levels (i.e., "How different would the results be if I had not used provocation?").

References

¹ Aleksic B, Draghi M, Ritoux S, Bailly S, Lacroix M, Oswald IP, Bailly JD, Robine E. Aerosolization of Mycotoxins after Growth of Toxinogenic Fungi on Wallpaper. *Appl Environ Microbiol.* 2017 Aug 1;83(16):e01001-17. doi: 10.1128/AEM.01001-17. PMID: 28646113; PMCID: PMC5541226.

² Kraft S, Buchenauer L, Polte T. Mold, Mycotoxins and a Dysregulated Immune System: A Combination of Concern? *Int J Mol Sci.* 2021 Nov 12;22(22):12269. doi: 10.3390/ijms222212269. PMID: 34830149; PMCID: PMC8619365.

Regulatory Statement:

This test has been laboratory developed and their performance characteristics determined by Vibrant America LLC, a CLIA-certified laboratory performing the test CLIA#:05D2078809. The test has not been cleared or approved by the U.S. Food and Drug Administration (FDA). Although FDA does not currently clear or approve laboratory-developed tests in the U.S., certification of the laboratory is required under CLIA to ensure the quality and validity of the tests.

Why Vibrant?

Lab Methodology

Vibrant is a CLIA-certified lab that uses the **advanced tandem LC- mass spectrometer**, which can detect compounds at the pg/ml level.

Methodology

The Mycotoxins test uses **liquid chromatography** and **mass spectrometry (LC-MS/MS)**. The mass spectrum of the sample determines the concentration of each analyte measured. The analyte results are expressed by normalizing to the quantity of creatinine measured to account for urine dilution variations.

