

## PATIENT

NAME: MYCOTOXINS DEMO  
DATE OF BIRTH: 01-01-1111 GENDER: Male  
TELEPHONE: 000-000-0000 AGE: 01

ACCESSION ID: 2208200031  
SPECIMEN COLLECTED: 2022-08-25  
SPECIMEN RECEIVED: 2022-08-26  
FINAL REPORT DATE: 2022-08-30

FASTING: UNKNOWN

## PROVIDER:

PRACTICE NAME: DEMO CLIENT, MD  
PROVIDER NAME: DEMO CLIENT, MD  
PHLEBOTOMIST: 0

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Vibrant Wellness is pleased to present to you, 'Mycotoxins panel', to help you make healthy lifestyle, dietary and treatment choices in consultation with your healthcare provider. It is intended to be used as a tool to encourage a general state of health and well-being.

The Vibrant Mycotoxins Panel is a test to identify and quantify the level of a large set of mycotoxins from both food and environmental molds present in your urine. The results are provided in 3 tables subgrouping the mycotoxins into Aflatoxins, Trichothecenes and Other Mycotoxins.

The report begins with the summary page which lists only the mycotoxins whose levels are >95th percentile (Red) and 75th-95th percentile (Yellow) of reference range, normalized to Urine creatinine levels. Additionally, the previous value is also indicated for your referral (if available). Following this section is the complete list of the mycotoxins and their absolute levels normalized to Creatinine in a quantile format along with the reference ranges. These levels are shown with three shades of color – Green, Yellow and Red. Reference ranges were determined using urine samples from 1000 apparently healthy individuals. The result in green corresponds to 0 to 75th percentile, the result in yellow corresponds to 75th to 95th percentile and the result in red corresponds to greater than 95th percentile of reference range. All content provided in the report are purely for informational purposes only and should not be considered medical advice. Any changes based on the information should be made in consultation with your healthcare provider.

The Vibrant Wellness platform provides tools for you to track and analyze your general wellness profile. Testing for the Mycotoxins panel is performed by Vibrant America, a CLIA certified lab CLIA#:05D2078809. Vibrant Wellness provides and makes available this report and any related services pursuant to the Terms of Use Agreement (the "Terms") on its website at [www.vibrant-wellness.com](http://www.vibrant-wellness.com). By accessing, browsing, or otherwise using the report or website or any services, you acknowledge that you have read, understood, and agree to be bound by these terms. If you do not agree to accept these terms, you shall not access, browse, or use the report or website. The statements in this report have not been evaluated by the Food and Drug Administration and are only meant to be lifestyle choices for potential risk mitigation. Please consult your physician/dietitian for medication, treatment, or lifestyle management. This product is not intended to diagnose, treat, or cure any disease.

Pediatric ranges have not been established for this test. It is important that you discuss any modifications to your diet, exercise, and nutritional supplementation with your physician before making any changes.

# Mycotoxins Summary

LAST NAME	FIRST NAME	GENDER	DATE OF BIRTH	ACCESSION ID	DATE OF SERVICE
DEMO	DEMO	Male	01-01-1111	2208200031	2022-08-26

## High (>95th percentile)

TEST NAME	CURRENT RESULT	PREVIOUS RESULT	CURRENT RESULT	PREVIOUS RESULT	REFERENCE
Enniatin B1(ENN B1)	0.28		0.05 0.13 0.22		≤0.22 ng/g
Ochratoxin A (OTA)	7.12		0.05 3.83 6.8		≤6.8 ng/g
Sterigmatocystin (STC)	0.55		0.05 0.3 0.53		≤0.53 ng/g
Verrucarin J	11.35		0.05 5.18 9.2		≤9.2 ng/g

## Moderate (75th-95th percentile)

TEST NAME	CURRENT RESULT	PREVIOUS RESULT	CURRENT RESULT	PREVIOUS RESULT	REFERENCE
Citrinin (CTN)	10.8		0.05 7.05 12.5		≤12.53 ng/g
Fumonisin B3	6.13		0.05 6.08 10.8		≤10.8 ng/g
Patulin	7.43		0.05 6.53 11.6		≤11.6 ng/g
Roridin A	4.77		0.05 4.28 7.6		≤7.6 ng/g
Verrucarin A	0.83		0.05 0.75 1.33		≤1.33 ng/g

## Urine Creatinine

TEST NAME	CURRENT RESULT	PREVIOUS RESULT	CURRENT RESULT	PREVIOUS RESULT	REFERENCE
Urine Creatinine	0.94		0.05 0.24 2.16		0.25-2.16 mg/mL

Results are creatinine corrected to account for urine dilution variations.

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## Aflatoxin

TEST NAME	PERCENTILE		REFERENCE	TEST NAME	PERCENTILE		REFERENCE
	75th	95th			75th	95th	
Aflatoxin B1 (AFB1)	3.55		≤6.93 ng/g	Aflatoxin B2 (AFB2)	1.07		≤8.13 ng/g
Aflatoxin G1	0.95		≤6.53 ng/g	Aflatoxin G2	5.72		≤10.8 ng/g
Aflatoxin M1	1.72		≤6.4 ng/g				

## Other

TEST NAME	PERCENTILE		REFERENCE	TEST NAME	PERCENTILE		REFERENCE
	75th	95th			75th	95th	
Chaetoglobosin A (CHA)	17.45		≤31.87 ng/g	Citrinin (CTN)	10.8		≤12.53 ng/g
Dihydrocitrinone	5.41		≤16.53 ng/g	Enniatin B1(ENN B1)	0.28		≤0.22 ng/g
Fumonisin B1	0.28		≤6.13 ng/g	Fumonisin B2	2.08		≤7.2 ng/g
Fumonisin B3	6.13		≤10.8 ng/g	Gliotoxin	47.25		≤207.87 ng/g
Mycophenolic Acid	1.23		≤6.4 ng/g	Ochratoxin A (OTA)	7.12		≤6.8 ng/g
Patulin	7.43		≤11.6 ng/g	Sterigmatocystin (STC)	0.55		≤0.53 ng/g
Zearalenone (ZEN)	0.29		≤0.67 ng/g				

### COMMENTS

**Citrinin (CTN)**  
 Citrinin (CTN) is a nephrotoxic mycotoxin mainly produced by *Penicillium* although other genera such as *Aspergillus* and *Monascus* are also known to produce these toxins. CTN occurs in different plant products, especially in grains, and also in beans, fruit, vegetables, herbs and spices. Often, the co-occurrence with other mycotoxins is observed, especially ochratoxin A (OTA). It is a known fact that CTN occurs during fermentation of red mold rice as a secondary metabolite of *Monascus purpureus*. Red mold rice has been used for lowering lipoprotein levels in blood and also as a food dye for centuries. Its toxic effects have been linked to CTN-mediated oxidative stress and mitochondrial dysfunction in biological systems.

**Enniatin B1(ENN B1)**  
 Mycotoxin enniatin B1 (ENN B1) is a secondary metabolism product of *Fusarium* fungi. It is a well-known antibacterial, antifungal, herbicidal, and insecticidal compound. It has been found as a contaminant in several food commodities, particularly in cereal grains. ENN B1 are commonly found in fish, dried fruits, nuts, spices, cocoa, coffee products, etc. Moreover, some food processes, including cooking, baking, frying, and roasting, exert a potent cytotoxic effect on several human cell lines. ENN B1 toxicity involves the inhibition of acyl-CoA: cholesterol acyl transferase (ACAT) activity and oxidative stress. ENN B also exerts cytotoxic activities by inducing mitochondrial modifications and cell cycle disruption, finally resulting in apoptotic cell death.

**Fumonisin B3**  
 Fumonisin B3 is a mycotoxin produced mainly by *Fusarium*, that belongs to the Fumonisin family, one of the most prevalent fungi of maize and corn-based foods and livestock feeds. Fumonisin B3 is the third most abundant fumonisin found in contaminated maize. However, FB3 is less toxic than FB1 and FB2.

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## Other

### COMMENTS

#### Ochratoxin A (OTA)

Ochratoxin A (OTA), a renal toxin, is produced majorly by *Aspergillus* and *Penicillium* fungal species. Ochratoxin A has been found in barley, oats, rye, wheat, coffee beans, and other plant products, with barley having a particularly high likelihood of contamination. It is frequently found in pork intended for human consumption. It is immunotoxic, teratogenic, myelotoxic, and mutagenic. It effectively interrupts the intestinal barrier functions. OTA displays a long elimination half-life and stimulates the major inflammatory cytokines released. Ochratoxin A is a mycotoxin found in food that is nephrotoxic and carcinogenic in the kidney and induces differentiation in cloned renal cell lines. OTA is efficiently absorbed from the gastrointestinal tract, mainly in the small intestine. It is distributed via the blood, mainly to the kidneys, with lower concentrations found in the liver, muscle, and fat.

#### Patulin

Patulin is a toxic chemical contaminant produced by several species of mold, especially *Aspergillus*, *Penicillium*, and *Byssoschlamys*. One of the most common offenders in patulin contamination is blue mold, which causes soft rot in apples, pears, cherries, and other fruits. It is the most common mycotoxin found in apples and apple-derived products such as juice, cider, compotes, and other foods intended for young children. Exposure to this mycotoxin is associated with immunological, neurological, and gastrointestinal outcomes. Toxic effects of patulin include neural syndromes, brain hemorrhage, skin lesions, skin cancer, lung disease, and mutagenicity. Several studies have revealed its mutagenicity, teratogenicity, chromosomal aberration, DNA strand damage, and micronucleus formation in mammalian cells.

#### Sterigmatocystin (STC)

Sterigmatocystin (STC) is a carcinogenic and mutagenic mycotoxin produced by fungi of many *Aspergillus* species. The presence of STC has been detected in a wide range of crops (e.g., corn, grains, soybeans, green coffee beans, nuts), spices, and brewing and dairy products (cheese), too. The kidneys and liver are the two main organs affected by STC toxicity. The pathological symptoms after STC-exposure are hepatocellular necrosis and haemorrhages in the liver, and hyaline degeneration, hemorrhages, and tubular necrosis in the kidneys. STC also has immunomodulatory activity, and mutagenic effects have been detected too. Through induction of DNA damage, it leads to cytotoxicity, inhibition of cell-cycle and mitosis.

## Trichothecenes

TEST NAME	PERCENTILE		REFERENCE	TEST NAME	PERCENTILE		REFERENCE
	75th	95th			75th	95th	
Deoxynivalenol(DON)	8.67		≤67.47 ng/g	Diacetoxyscirpenol (DAS)	<0.05		≤4.27 ng/g
Isostratoxin F	<0.05		≤0.18 ng/g	Nivalenol (NIV)	0.34		≤3.2 ng/g
Roridin A	4.77		≤7.6 ng/g	Roridin E	0.41		≤1.33 ng/g
Roridin H	0.28		≤8.4 ng/g	Roridin L2	1.12		≤6.8 ng/g
Satratoxin G	0.1		≤0.18 ng/g	Satratoxin H	<0.05		≤0.18 ng/g
T-2 Toxin	0.07		≤0.18 ng/g	Verrucarin A	0.83		≤1.33 ng/g
Verrucarin J		11.35	≤9.2 ng/g				

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## Trichothecenes

### COMMENTS

#### Roridin A

Roridin A mycotoxin is one of the important macrocyclic trichothecenes, produced on foodstuffs such as corn, rice, wheat and other crops. Roridin A is an inhibitor of pollen development in *Arabidopsis thaliana*. Roridin A is isolated from the fungus *Cylindrocarpus* species. Roridin A inhibits pollen development at concentrations of 2  $\mu$ M. Humans suffer from several pathologies due to intoxication after consumption of foodstuffs contaminated with trichothecenes. Roridin A has been implicated in the causation of numerous signs and symptoms of disease, including fatigue, skin irritation, headache, dry cough, irritated eyes, generalised allergic symptoms, and inflammation. Roridin A mycotoxins prevent polypeptide chain initiation or elongation and interact with the enzyme peptidyl transferase.

#### Verrucarin A

One of the most toxic trichothecenes is Verrucarin A. Verrucarin A is derived from *Myrothecium verrucarum*, a fungal plant pathogen. Verrucarin A is a macrocyclic trichothecenes that is primarily produced by *Myrothecium*, *Stachybotrys*, and *Fusarium*. This toxin has a wide range of antiviral, antifungal, and antibacterial activity. In early days, these macrocyclic trichothecene compound structures were modified to create new anticancer agents. Like Roridin E, Verrucarin A is found not only in molds in damp environments but also in molds that occur naturally on a variety of crops intended for human and animal consumption. Trichothecenes have multiorgan effects, including anorexia and weight loss; growth retardation; nervous disorders; cardiovascular alterations; immunodepression; hemostatic derangements; skin toxicity; decreased reproductive capacity; bone marrow damage; and alimentary toxic aleukia.

#### Verrucarin J

Verrucarin J is a trichothecene produced by *Stachybotrys chartarum*. They can grow in damp indoor environments and may contribute to health problems among building occupants. Verrucarin J molecules are small enough to be airborne and easily inhaled. Inhalation is the most dangerous form of exposure, but with Verrucarin J being lipophilic, mycotoxins can easily cross cell membranes, which means they can be absorbed through the mouth and even the skin. Verrucarin J can inhibit protein synthesis as well as DNA and RNA damage in human cells.



## Risk and Limitations

This test has been developed and its performance characteristics determined by Vibrant America LLC., a CLIA certified lab. These assays have not been cleared or approved by the U.S. Food and Drug Administration.

Mycotoxins do not demonstrate absolute positive and negative predictive values for mold related illnesses. Its clinical utility has not been fully established. Clinical history and current symptoms of the individual must be considered by the healthcare provider prior to any interventions. Test results should be used as one component of a physician's clinical assessment. Quantification of mycotoxins in urine is not FDA-recognized diagnostic indicator of mold exposure.

Mycotoxins testing is performed at Vibrant America, a CLIA certified laboratory. Vibrant America has effective procedures in place to protect against technical and operational problems. However, such problems may still occur. Examples include failure to obtain the result for a specific mycotoxin due to circumstances beyond Vibrant's control. Vibrant may re-test a sample to obtain these results but upon re-testing the results may still not be obtained. As with all medical laboratory testing, there is a small chance that the laboratory could report incorrect results. A tested individual may wish to pursue further testing to verify any results.

The information in this report is intended for educational purposes only. While every attempt has been made to provide current and accurate information, neither the author nor the publisher can be held accountable for any errors or omissions.

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SAMPLE