



# The Great Plains Laboratory, Inc.

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**GPL-MYCOTOX**

Requisition #

Physician Name

Patient Name

Date of Collection

12/18/2018

Patient BirthDate

Time of Collection

7:00 AM

Sex

Print Date

12/31/2018

## Mycotox Profile

Metabolite	Results (ng/g creatinine)	Common Range of Positive Results
<b>Aspergillus</b>		
Aflatoxin-M1	0.00	3.5 - 20
		▲ 3.5 20 ▲
<b>Ochratoxin A</b>		
Ochratoxin A	62.12	4 - 20
		▲ 4 20 ▲
<b>Glitoxin</b>		
Glitoxin	1366.35	200 - 2000
		▲ 200 2000 ▲
<b>Penicillium</b>		
Sterigmatocystin	2.43	0.2 - 1.75
		▲ 0.2 1.75 ▲
<b>Mycophenolic Acid</b>		
Mycophenolic Acid	91.04	5 - 50
		▲ 5 50 ▲
<b>Stachybotrys</b>		
Roridin E	0.00	1 - 6
		▲ 1 6 ▲

Testing performed by The Great Plains Laboratory, Inc., Lenexa, Kansas. The Great Plains Laboratory has developed and determined the performance characteristics of this test. The test has not been evaluated by the U.S. Food and Drug Administration. The FDA does not currently regulate such testing.





**Ochratoxin:** Ochratoxin A (OTA) is a nephrotoxic, immunotoxic, and carcinogenic mycotoxin. This chemical is produced by molds in the *Aspergillus* and *Penicillium* families. Exposure is done primarily through water damaged buildings. Minimal exposure can occur through contaminated foods such as cereals, grape juices, dairy, spices, wine, dried vine fruit, and coffee. Exposure to OTA can also come from inhalation exposure in water-damaged buildings. OTA can lead to kidney disease and adverse neurological effects. Studies have shown that OTA can lead to significant oxidative damage to multiple brain regions and is highly nephrotoxic. Dopamine levels in the brain of mice have been shown to be decreased after exposure to OTA. Some studies have hypothesized that OTA may contribute to the development of neurodegenerative diseases such as Alzheimer's and Parkinson's. Treatment should be aimed at removing the source of exposure. Agents such as oral cholestyramine, charcoal, and phenylalanine can help prevent the absorption of these toxins from food. Antioxidants such as vitamins A, E, C, NAC, rosmarinic acid, and liposomal glutathione alone or in combination have been shown to mitigate the oxidative effects of the toxin. Bentonite or zeolite clay is reported to reduce the absorption of multiple mycotoxins found in food, including OTA. Studies have also shown that OTA is present in sweat, which supports the use of sauna as a treatment to increase the excretion of OTA. (PMID 17195275, 16621780, 16293235, 27521635, 22069626, 24792326, 22253638, 16140385, 2467220, 16844142, 19148691, 22069658, 16019795, 18286403, 15781206, 11439224, 17092826, 32710148)

**Gliotoxin:** Gliotoxin (GTX) is produced by the mold genus *Aspergillus*. *Aspergillus* spreads in the environment by releasing conidia which are capable of infiltrating the small alveolar airways of individuals. In order to evade the body's defenses *Aspergillus* releases Gliotoxin to inhibit the immune system. One of the targets of Gliotoxin is PtdIns (3,4,5) P3. This results in the downregulation of phagocytic immune defense, which can lead to the exacerbation of polymicrobial infections. Gliotoxin impairs the activation of T-cells and induces apoptosis in monocytes and in monocyte-derived dendritic cells. These impairments can lead to multiple neurological syndromes. (PMID: 16712786, 27048806, 21575912, 23278106)

**Sterigmatocystin:** Sterigmatocystin (STC) is a mycotoxin that is closely related to aflatoxin. STC is produced from several species of mold such as *Aspergillus*, *Penicillium*, and *Bipolaris*. STC is considered to be carcinogenic, particularly in the cells of the GI tract and liver. STC has been found in the dust from damp carpets. It is also a contaminant of many foods including grains, corn, bread, cheese, spices, coffee beans, soybeans, pistachio nuts, and animal feed. In cases of lung aspergilloma, STC has been found in human tissue specimens. The toxicity of STC affects the liver, kidneys, and immune system. Tumors have been found in the lungs of rodents that were exposed to STC. Oxidative stress becomes measurably elevated during STC exposure which causes a depletion of antioxidants such as glutathione, particularly in the liver. Because STC is structurally similar to Aflatoxin, many of the same therapies will be effective. The drug Oltipraz can increase glutathione conjugation of aflatoxin while inhibiting the toxic effect of P450 oxidation, reducing liver toxicity and promoting safer elimination. A diet of carrots, parsnips, celery, and parsley may reduce the carcinogenic effects of aflatoxin. Bentonite or zeolite clay is reported to reduce the absorption of multiple mycotoxins found in food, including STC. Supplementation with chlorophyllin, zinc, and vitamins A, E, and C has been used to treat exposure to STC. (PMID: 10855723, 19998385, 21287681, 23705030, 24514428, 12147486, 15027811, 12244755, 11727790, 12725069, 18286403, 10050868, 7585637, 16762476, 16019795, 18286403, 15781206, 11439224, 17092826, 11724948, 12628519, 27017951, 25176419, 11727790)

**Mycophenolic Acid:** Mycophenolic Acid (MPA) produced by the *Penicillium* fungus. MPA is an immunosuppressant which inhibits the proliferation of B and T lymphocytes. MPA exposure can increase the risk of opportunistic infections such as *Clostridia* and *Candida*. MPA is associated with miscarriage and congenital malformations when the woman is exposed in pregnancy. (PMID: 28646113, 27809954, 27599910)



**Dihydrocitrinone:** Dihydrocitrinone is a metabolite of Citrinin(CTN), which is a mycotoxin that is produced by the mold species *Aspergillus*, *Penicillium*, and *Monascus*. CTN exposure can lead to nephropathy, because of its ability to increase permeability of mitochondrial membranes in the kidneys. The three most common exposure routes are through ingestion, inhalation, and skin contact. CTN has been shown to be carcinogenic in rat studies. Multiple studies have linked CTN exposure to a suppression of the immune response. PMID: 11567776, 24048364, 10788357