



4100 Fairway Drive, Ste 600
Carrollton, TX 75010
www.realtimelab.com

Fungal Count Dx Report Form 08/08/2023

COMPANY INFORMATION

Company: Real Time Laboratories
Project: House
Location: 123 Street St. City, State 00000
Project Phone:
Project Email: NA

ORDER INFORMATION

Accession No: EN080823EM
Date of Service: 08/8/2023
Reported On: 08/08/2023
Contact: Doctor Doe

SAMPLE INFORMATION

Date of Receipt: 08/08/2023
Time of Receipt: 14:32 CDT
Date of Collection: 08/8/2023
Time of Collection: 00:00 CDT
Sample Type: Dust

LAB INFORMATION

Phone: 1-972-492-0419
Fax: 1-972-243-7759
Email: info@realtimelab.com
CLIA #: 45D1051736
CAP #: 7210193
Tax ID #: 0669342

Procedure: FUNGAL COUNT

TYPE: Quantitative PCR (Polymerase Chain Reaction)

RESULTS:

Code	TEST	Results (Fungal Elements/ML)
EM001	Aspergillus flavus	6235.00
EM002	Aspergillus fumigatus	0.00
EM003	Aspergillus niger	0.00
EM004	Aspergillus ochraceus	0.00
EM005	Aspergillus versicolor	0.00
EM006	Chaetomium globosum	0.00
EM008	Penicillium brevicompactum	51253.00
EM010	Stachybotrys chartarum	0.00
EM013	Aspergillus terreus	0.00
EM014	Candida auris	0.00
EM015	Fusarium solani	0.00
EM016	Penicillium chrysogenum	0.00

REPORT COMMENTS:

Dust from House

Director Signature

Director or Designee Signature _____

RTL maintains liability limited to cost of analysis. Interpretation of the data contained in this report is the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by RTL. The above test report relates only to the items tested. RTL bears no responsibility for sample collection activities or analytical method limitations.

MOLD	MYCOTOXIN PRODUCED	POTENTIAL HEALTH ISSUES
<i>Aspergillus fumigatus</i>	Gliotoxin, Aflatoxin	<i>A. fumigatus</i> is frequently found in homes and buildings [1]. It is considered to be an opportunistic pathogen, meaning it rarely infects healthy individuals, but is the leading cause of invasive aspergillosis (IA) in immunocompromised individuals such as cancer, HIV or transplant patients [2].
<i>Aspergillus flavus</i>	Gliotoxin, Aflatoxin	<i>A. flavus</i> is the second leading cause of invasive aspergillosis in immunocompromised patients. Particularly common clinical syndromes associated with <i>A. flavus</i> include: chronic granulomatous sinusitis, keratitis, cutaneous aspergillosis, wound infections and osteomyelitis following trauma and inoculation [3, 4]. Can cause liver cancer in humans [5].
<i>Aspergillus terreus</i>	Gliotoxin, Citirin	Inhalation of fungal spores, which travel down along the respiratory tract, cause the typical respiratory infection [6].
<i>Aspergillus versicolor</i>	Sterigmatocystin	<i>A. versicolor</i> is one of the most frequently found molds in water-damaged buildings. <i>A. versicolor</i> is known to produce a mycotoxin called sterigmatocystin a potentially carcinogenic and hepatotoxic mycotoxin. It is primarily toxic to the liver and kidneys [7].
<i>Aspergillus ochraceus</i>	Ochratoxin	Ochratoxin has been demonstrated to be Nephrotoxic, Hepatotoxic, and Carcinogenic and is a potent teratogen and immune-suppressant [8]. It has also been associated with urinary tract infections and bladder cancer [9].
<i>Aspergillus niger</i>	Ochratoxin, Gliotoxin	<i>A. niger</i> produces gliotoxin, which has been identified in the sera of humans and mice with aspergillosis. Causes immunosuppression in patients [8].
<i>Stachybotrys chartarum</i>	Macrocyclic Trichothecenes	<i>S. chartarum</i> , commonly known as black mold, is highly toxic to humans. Nausea, vomiting, diarrhea, burning erythema, ataxia, chills, fever, hypotension, hair loss and confusion are symptoms in individuals living or working inside <i>Stachybotrys</i> infested homes and buildings [10].
<i>Chaetomium globosum</i>	Chaetoglobosins	<i>C. globosum</i> is a common indoor fungal contaminant of water damaged homes or buildings. Like <i>Stachybotrys</i> , <i>C. globosum</i> spores are relatively large and due to their mode of release are not as easily airborne as are some other molds [11].
<i>Fusarium species</i>	Fumonisin; Zearalenone	<i>Fusarium</i> can cause superficial infections such as keratitis or onychomycosis in healthy individuals and disseminated infections in immunocompromised patients [12].
<i>Candida auris</i>	Unknown	<i>C. auris</i> can be found in healthcare facilities and can be spread through contact with infected patients and equipment's. <i>C. auris</i> can cause blood stream infections, wound infections and ear infections [13].
<i>Penicillium brevicompactum</i>	Ochratoxin A	Producer of the toxin Ochratoxin A. Fungal particles depend on the relative humidity [14]. Can lead to chronic Rhinosinusitis if breathed in high concentrations [15].
<i>Penicillium chrysogenum</i>	Ochratoxin A	Producer of the toxin Ochratoxin A. Fungal particles depend on the relative humidity [14]. Can lead to chronic Rhinosinusitis if breathed in high concentrations [16]. High levels are correlated with the development of sick building syndrome [17].

REFERENCES:

- Vesper, S., et al., *Quantitative PCR analysis of molds in the dust from homes of asthmatic children in North Carolina*. J Environ Monit, 2007. 9(8): p. 826-30.
- Roohani, A.H., et al., *Comparing the profile of respiratory fungal pathogens amongst immunocompetent and immunocompromised hosts, their susceptibility pattern and correlation of various opportunistic respiratory fungal infections and their progression in relation to the CD4+T-cell counts*. Indian J Med Microbiol, 2018. 36(3): p. 408-415.
- Deshazo, R.D., *Syndromes of invasive fungal sinusitis*. Med Mycol, 2009. 47 Suppl 1: p. S309-14.
- Hedayati, M.T., et al., *Aspergillus flavus: human pathogen, allergen and mycotoxin producer*. Microbiology (Reading), 2007. 153(Pt 6): p. 1677-1692.
- Nixon, M.W., *Aflatoxin and liver cancer*. Lancet, 1990. 335(8698): p. 1165.
- Vahedi Shahandashti, R. and C. Lass-Flörl, *Antifungal resistance in Aspergillus terreus: A current scenario*. Fungal Genet Biol, 2019. 131: p. 103247.
- Reijula, K. and T. Tuomi, *Mycotoxins of aspergilli: exposure and health effects*. Front Biosci, 2003. 8: p. s232-5.
- Bui-Klimke, T.R. and F. Wu, *Ochratoxin A and human health risk: a review of the evidence*. Crit Rev Food Sci Nutr, 2015. 55(13): p. 1860-9.
- Sobel, J.D. and J.A. Vazquez, *Fungal infections of the urinary tract*. World J Urol, 1999. 17(6): p. 410-4.
- Kuhn, D.M. and M.A. Ghannoum, *Indoor mold, toxigenic fungi, and Stachybotrys chartarum: infectious disease perspective*. Clin Microbiol Rev, 2003. 16(1): p. 144-72.
- Straus, D.C., *The possible role of fungal contamination in sick building syndrome*. Front Biosci (Elite Ed), 2011. 3(2): p. 562-80.
- Cabrera-Aguas, M., P. Khoo, and S.L. Watson, *Infectious keratitis: A review*. Clin Exp Ophthalmol, 2022. 50(5): p. 543-562.
- Bradley, S.F., *What Is Known About Candida auris*. JAMA, 2019. 322(15): p. 1510-1511.
- Heutte, N., et al., *Assessment of multi-contaminant exposure in a cancer treatment center: a 2-year monitoring of molds, mycotoxins, endotoxins, and glucans in bioaerosols*. Environ Monit Assess, 2017. 189(1): p. 31.
- Murr, A.H., et al., *Some chronic rhinosinusitis patients have elevated populations of fungi in their sinuses*. Laryngoscope, 2012. 122(7): p. 1438-45.
- Bhavsar, S., et al., *Invasive rhinosinusitis due to Penicillium chrysogenum in an adolescent man with new-onset leukaemia: a diagnostic dilemma*. BMJ Case Rep, 2022. 15(12).
- Straus, D.C., *Molds, mycotoxins, and sick building syndrome*. Toxicol Ind Health, 2009. 25(9-10): p. 617-35.