I'm not a robot

Urine test for mycotoxins

If you have been struggling with unexplained symptoms like fatigue, difficulty concentrating, or allergy-like symptoms, you may be wondering if mold and mycotoxin testing can help you find answers. Testing for mold or mycotoxins (toxins produced by mold and other fungi) may be helpful in some contexts, but it's definitely not a recommended starting point in your health journey. Mycotoxin research is still in its infancy and testing is not well validated. Misinterpreting or putting too much weight on test results may distract from identifying other important health issues. Before considering mycotoxin testing, it's essential to explore other factors that may be responsible for your symptoms. Poor gut health is often the reason for unexplained, mysterious symptoms. In this article, we will break down all of the important points to consider before testing for mold or mycotoxins. Next, we will discuss the most common types of mold tests that are available, including the pros and cons for each and who they're most suitable for. First, let's take a quick look at what mycotoxins are. Mycotoxins are certain toxins that are naturally produced by mold and other kinds of fungi. Humans may be exposed to mycotoxins through the air in mold-affected buildings or homes and through certain kinds of foods. Mycotoxin exposure can lead to illness, the symptoms and severity of which vary significantly from person to person 1 2. Sinusitis or other sinus issues Shortness of breath, coughing, or wheezing Development or worsening of asthma or allergic reactions Memory impairments or brain fog Fatigue or chronic fatigue syndrome Slurred speech or lack of coordination Dizziness or lightheadedness First, let's distinguish between mold and mycotoxin testing. Mold testing generally refers to environmental testing (for the presence of mold in a home or building), while mycotoxin testing refers to tests that look at the presence or effects of mycotoxins in the body. You might want to consider mycotoxin testing if: You have already taken care of foundational health steps, including modifying diet and lifestyle and healing your gut, but you are still not feeling well; You are experiencing symptoms or health effects consistent with mold toxicity, and; You have access to an experienced, trusted, and rational practitioner who can help to interpret your results. Mycotoxin testing can be helpful in some cases, but there are a number of points to consider before jumping in. Mycotoxicity is not well defined. Research on mycotoxin testing is still in its infancy. This means that even those who study mycotoxins or mold for a living don't know exactly how to interpret mycotoxin test results. This doesn't necessarily mean that test results can't be useful — they should always be taken with a grain of salt. Choosing the best test is challenging. There are many different kinds of mycotoxin and mold tests available, using not only different methods but different reference ranges, and even looking at different kinds of mold species and mycotoxins. This makes an area that is already lacking in research even more confusing. Mold can be a red herring. Mold or mycotoxins may show up in small quantities on tests, even if the levels are likely not problematic. This can be a distraction from true underlying health issues that need to be addressed. Mold-related illnesses are complex. Even as we begin to untangle the nuances in testing, there is a lack of consensus when it comes to the treatment of mold-related illnesses and mycotoxicity. In other words, mycotoxin testing might provide clues to treatments, but it does not provide a road map. Ultimately, whether or not mycotoxin testing is worth it really depends on the case. But either way, it's essential to keep the bigger picture in mind and to remember that mycotoxin testing is only one piece of the puzzle. There are many different kinds of tests available, and they each have their own benefits and challenges. Some tests look at levels of mold exposure or the burden of mycotoxins on the body, while others analyze how the immune system is reacting to mold and mycotoxins. Research on all mold and mycotoxin testing is limited, and there is no perfect test 3. There are currently no FDA-approved laboratory tests for mycotoxins. Keep in mind that two people may have similar levels of exposure to toxins but very different capacities to detoxify from them. When selecting a test, ideally with the help of a practitioner, consider your main question. Is it "Have I been exposed to mold?" or is it "How is my body handling a known mold exposure?" How it works: Urine mycotoxin testing is a broad category that includes several different tests from different labs. These tests measure levels of various different mycotoxins, which may include ochratoxin a, citrinin, aflatoxin b1, fumonisin, and zearalenone. Many of these mycotoxins are produced by the common mold species aspergillus. All urine mycotoxin tests measure the levels of mold metabolites that you are eliminating through a urine sample. Some also measure markers related to immune response. Pros: Urine testing provides direct measurements of the toxins being excreted, and you use the test to check your levels throughout treatment. Some studies have found that, compared to healthy individuals, people who have been exposed to mold and have symptoms of toxicity show elevated mycotoxin levels in their urine 3 4. Cons: Certain factors, including diet, supplements, and chronic illness, may affect how many toxins you excrete in your urine. Additionally, some research reviews have suggested that the presence of mycotoxins in many common foods means that some people might be flagged on urine tests even if they are healthy 5 6. Finally, a urine mycotoxin analysis doesn't necessarily help to determine whether mold is a current problem for your body or in your environment. That's because you could be excreting mycotoxins from an older exposure. Who it's best for: Urine mycotoxin testing may be best if your symptoms are puzzling and frustrating but not severe and you have already taken the necessary steps to improve your diet and lifestyle. How it works: Blood tests for mycotoxins measure anti-mold antibodies, which have been shown to be elevated among people who have been exposed to mold 7. Pros: Blood tests can tell you how your body is currently reacting to mycotoxins by measuring markers of immune system reactivity. Cons: Research is limited when it comes to the accuracy or relevance of serum mycotoxin testing. Serum testing also can't show you how much you're excreting or eliminating. Who it's best for: Blood testing may be best for those who are less likely to be able to excrete mycotoxins through urine. This may include those who are more severely ill or who have a hypersensitivity to food and supplements. How it works: Visual Contrast Sensitivity (VCS) testing aims to measure a component of neurological function that may be affected by exposure to mycotoxins and other biotoxins. This method looks at your ability to see details in varying contrasts of black, white, and grey on a computer screen. Pros: VCS testing is inexpensive, fast, and simple. It can also be easily repeated throughout treatment. One study found that VCS scores were lower among employees of a school that had been exposed to water damage than employees at an unaffected school 8. Cons: VCS testing is limited in the sense that it can't tell you how much mold you've been exposed to, how much you are excreting, or how exposure may be affecting other areas beyond neurological function. Who it's best for: VCS testing may be best for those who suspect or know they've been exposed to mold or mycotoxins, have neurological symptoms, and are on a budget. How it works: Do-it-yourself kits and inspection services are available to test for mold and other toxins in your home if you suspect that they may be problems. Pros: Environmental testing can help you to identify and measure the presence of mold in your home. Limited research has shown that the popular ERMI (Environmental Relative Moldiness Index) test can detect environmental mold that correlates with asthma 9 10. Cons: Of course, while environmental testing can tell you that there is a mold problem in your environment, it can't tell you anything about how your body is reacting to that mold. Mold may also show up on environmental tests even when levels are likely not high enough to be harmful, which can lead to unnecessary panic. Who it's best for: Environmental testing might be a good idea if you suspect that mold exposure is a current problem in your home and want to know the degree of the problem. Try to work with a general environmental testing service as opposed to a mold-specific service so that other possible environmental toxins are not overlooked. Sometimes, symptoms that are associated with mold illness might actually be caused by poor gut health or inflammation. Making changes to diet and lifestyle can resolve some or all symptoms, potentially eliminating the need for mycotoxin testing. It's also easier to test for and treat mold toxicity if results are not confounded by gut health symptoms. Some important factors to consider are: Diet: Anti-inflammatory and gut-healing diets that focus on whole foods have been shown to improve symptoms like fatigue and brain fog 11 12 13. Exercise: Getting regular exercise has been shown by many studies to have a positive impact on cognitive function, energy levels, respiratory function, and overall health 14 15 16 17. Sleep: Getting enough sleep can help improve gut health, brain function, memory, and fatigue 18 19 20. Probiotics: One of the easiest and most effective ways to improve gut health is to start taking high-quality probiotics. The research-backed benefits of probiotics are numerous and include improving digestive health, fatigue, immune system function, and allergies or food sensitivities 21 22 23 24 25. Another reason to start with your diet and lifestyle is that these factors might actually influence your mycotoxin test results. Many mycotoxin tests work by measuring the toxins that your body is eliminating. However, if diet and lifestyle components are not in place, your body may be less capable of excreting toxins. This can mean not only worse health and symptoms but also that testing may not reflect your body's true ability to rid itself of mycotoxins. A low mold diet is sometimes recommended as a simple way to begin to heal from suspected mold illness. Low mold diets eliminate foods that feed fungal growth as well as those that may contain or be contaminated with mold. A low mold diet is fairly similar to a general anti-inflammatory diet, like the Paleo diet, which I often recommend to my patients. Many of the foods that are eliminated, like sugar and processed foods, should be avoided across the board. Things to avoid on a low mold diet include: Sugar Processed and refined foods Cheese Mushrooms Certain kinds of nuts including peanuts and cashews Wheat and rice Dried fruits Alcohol If diet, probiotics, and lifestyle factors alone are not enough to resolve your symptoms, the next step should be to look into whether you might have a gut health problem that requires a more specific treatment approach. Testing for imbalances or infections including small intestinal bacterial overgrowth (SIBO) or H. pylori can help to elucidate what's specifically going on in your gut. Gut health imbalances, including SIBO or intestinal permeability (leaky gut), can lead to many of the symptoms and health concerns associated with mold toxicity 24 26 27 28 29. For example: Fatigue is one of the most common symptoms of gut imbalances and gastrointestinal conditions including irritable bowel syndrome (IBS), SIBO, and leaky gut 24 26 27 29. Brain fog or difficulty remembering or thinking clearly has been linked to inflammation and imbalances in the gut 28 29. Food sensitivities, which may present with allergy-like symptoms, may be connected to intestinal inflammation or leaky gut 30 31 32. Gut imbalances are more common, better understood, and often more easily remedied than mold-related illnesses. By healing your gut, you may be able to avoid mycotoxin testing altogether and, more importantly, feel better. If you already know that you have been exposed to toxic mold through your home or workplace, the first step is to deal with the source of the exposure to the best of your ability. Signs of mold growth may include visible mold, dampness, leaks, and stained or moldy ceiling tiles. Mold spores can also show up in air conditioning units and on drywall. Black mold (stachybotrys chartarum) is often thought to be the most toxic kind of environmental mold, but this is not necessarily the case. All visible mold should be addressed. There are several steps that need to be taken in order to remove mold from a water-damaged building or home, including thorough drying, cleaning, and disinfecting. A mold remediation service can help with severe conditions. For prevention, a dehumidifier can help to reduce moisture and improve indoor air quality, and regular cleaning and disinfecting of indoor environments can help to control mold growth. Mycotoxin testing may be useful in some cases, but there are a number of important points and factors to consider first. Modifying your diet and lifestyle, with an emphasis on improving your gut health, is the first step when it comes to improving any aspect of your health. Imbalances in the gut can lead to a number of symptoms that might be associated with mold toxicity. If you continue to have symptoms after completing these fundamental steps and suspect that mold exposure or toxicity may be behind your symptoms, testing can be considered. Keep in mind that mycotoxin or mold testing may be able to provide some helpful information, but that given the lack of research in this field, all results should be interpreted cautiously. Dr. Michael Ruscio is a DC, natural health provider, researcher, and clinician. He serves as an Adjunct Professor at the University of Bridgeport and has published numerous papers in scientific journals as well as the book Healthy Gut, Healthy You. He also founded the Ruscio Institute of Functional Health, where he helps patients with a wide range of GI conditions and serves as the Head of Research. References Pizzorno J. Is Mold Toxicity Really a Problem for Our Patients? Part I-Respiratory Conditions. Integr Med (Encinitas). 2016 Apr;15(2):6-10. PMID: 27330483; PMCID: PMC4898283. Pizzorno J, Shippy A. Is Mold Toxicity Really a Problem for Our Patients? Part 2-Nonrespiratory Conditions. Integr Med (Encinitas). 2016 Jun;15(3):8-14. PMID: 27547160; PMCID: PMC4982651. William J. Rea. A Large Case-series of Successful Treatment of Patients Exposed to Mold and Mycotoxin. Clinical Therapeutics. Volume 40, Issue 6, Pages 889-893. DOI: Shaw, W. and M. Pratt-Hyatt. "Biochemical Markers in the Urine Associated with Gastrointestinal Mold-Overgrowth Are Linked with Elevated Urinary Mycotoxins in Patients with Suspected Mold Illness." (2019). Chang C, Gershwin ME. The Myth of Mycotoxins and Mold Injury. Clin Rev Allergy Immunol. 2019 Dec;57(3):449-455. doi: 10.1007/s12016-019-08767-4. PMID: 31608429. Melody Kawamoto, Elena Page. Notes from the Field: Use of Unvalidated Urine Mycotoxin Tests for the Clinical Diagnosis of Illness — United States, 2014. Morbidity and Mortality Weekly Report (MMWR), Centers for Disease Control and Prevention. February 20, 2015 / 64(06);157-158. Vojdani A, Campbell AW, Kashanian A, Vojdani E. Antibodies against molds and mycotoxins following exposure to toxigenic fungi in a water-damaged building. Arch Environ Health. 2003 Jun;58(6):324-36. PMID: 14992307. Thomas G, Burton NC, Mueller C, Page E, Vesper S. Comparison of work-related symptoms and visual contrast sensitivity between employees at a severely water-damaged school and a school without significant water damage. Am J Ind Med. 2012 Sep;55(9):844-54. doi: 10.1002/ajim.22059. Epub 2012 May 7. PMID: 22566108. Rea WJ. A Large Case-series of Successful Treatment of Patients Exposed to Mold and Mycotoxin. Clin Ther. 2018 Jun;40(6):889-893. doi: 10.1016/j.clinthera.2018.05.003. Epub 2018 May 31. PMID: 29861191. Sharpe RA, Bearman N, Thornton CR, Husk K, Osborne NJ. Indoor fungal diversity and asthma: a meta-analysis and systematic review of risk factors. J Allergy Clin Immunol. 2015 Jan;135(1):110-22. doi: 10.1016/j.jaci.2014.07.002. Epub 2014 Aug 23. PMID: 25159468. Haß U, Herpich C, Norman K. Anti-Inflammatory Diets and Fatigue. Nutrients. 2019 Sep 30;11(10):2315. doi: 10.3390/nu11102315. PMID: 31574939; PMCID: PMC6835556. Altobelli E, Del Negro V, Angeletti PM, Latella G. Low-FODMAP Diet Improves Irritable Bowel Syndrome Symptoms: A Meta-Analysis. Nutrients. 2017 Aug 26;9(9):940. doi: 10.3390/nu9090940. PMID: 28846594; PMCID: PMC5622700. Marum AP, Moreira C, Saraiva F, Tomas-Carus P, Sousa-Guerreiro C. A low fermentable oligo-di-mono saccharides and polyols (FODMAP) diet reduced pain and improved daily life in fibromyalgia patients. Scand J Pain. 2016 Oct;13:166-172. doi: 10.1016/j.sjpain.2016.07.004. Epub 2016 Aug 22. PMID: 28850525. Ruegsegger GN, Booth FW. Health Benefits of Exercise. Cold Spring Harb Perspect Med. 2018 Jul 2;8(7):a029694. doi: 10.1101/cshperspect.a029694. PMID: 28507196; PMCID: PMC6027933. Mandolesi L, Polverino A, Montuori S, Foti F, Ferraioli G, Sorrentino P, Sorrentino G. Effects of Physical Exercise on Cognitive Functioning and Wellbeing: Biological and Psychological Benefits. Front Psychol. 2018 Apr 27;9:509. doi: 10.3389/fpsyg.2018.00509. PMID: 29755380; PMCID: PMC5934999. Jaakkola, J.J.K., Aalto, S.A.M., Hernberg, S. et al. Regular exercise improves asthma control in adults: A randomized controlled trial. Sci Rep 9, 12088 (2019). Warburton DE, Nicol CW, Bredin SS. Health benefits of physical activity: the evidence. CMAJ. 2006 Mar 14;174(6):801-9. doi: 10.1503/cmaj.051351. PMID: 16534088; PMCID: PMC1402378. Deak MC, Stickgold R. Sleep and cognition. Wiley Interdiscip Rev Cogn Sci. 2010 Jul;1(4):491-500. doi: 10.1002/wcs.52. Epub 2010 Feb 1. PMID: 26271496; PMCID: PMC5831725. Worley SL. The Extraordinary Importance of Sleep: The Detrimental Effects of Inadequate Sleep on Health and Public Safety Drive an Explosion of Sleep Research. P T. 2018 Dec;43(12):758-763. PMID: 30559589; PMCID: PMC6281147. Diekelmann S. Sleep for cognitive enhancement. Front Syst Neurosci. 2014 Apr 2;8:46. doi: 10.3389/fnsys.2014.00046. PMID: 24765066; PMCID: PMC3980112. Hoveyda N, Heneghan C, Mahtani KR, Perera R, Roberts N, Glasziou P. A systematic review and meta-analysis: probiotics in the treatment of irritable bowel syndrome. BMC Gastroenterol. 2009 Feb 16;9:15. doi: 10.1186/1471-230X-9-15. PMID: 19220890; PMCID: PMC2656520. Mujagic Z, de Vos P, Boekschoten MV, Govers C, Pieters HH, de Wit NJ, Bron PA, Masclee AA, Troost FJ. The effects of Lactobacillus plantarum on small intestinal barrier function and mucosal gene transcription; a randomized double-blind placebo controlled trial. Sci Rep. 2017 Jan 3;7:40128. doi: 10.1038/srep40128. PMID: 28045137; PMCID: PMC5206730. Güvenç IA, Muluk NB, Mutlu FŞ, Eşki E, Altıntoprak N, Oktemer T, Cingi C. Do probiotics have a role in the treatment of allergic rhinitis? A comprehensive systematic review and meta-analysis. Am J Rhinol Allergy. 2016 Sep 1;30(5):157-175. doi: 10.2500/ajra.2016.30.4354. Epub 2016 Jul 20. PMID: 27442711. Han CJ, Yang GS. Fatigue in Irritable Bowel Syndrome: A Systematic Review and Meta-analysis of Pooled Frequency and Severity of Fatigue. Asian Nurs Res (Korean Soc Nurs Sci). 2016 Mar;10(1):1-10. doi: 10.1016/j.anr.2016.01.003. Epub 2016 Feb 1. PMID: 27021828. Frei R, Akdis M, O'Mahony L. Prebiotics, probiotics, synbiotics, and the immune system: experimental data and clinical evidence. Curr Opin Gastroenterol. 2015 Mar;31(2):153-8. doi: 10.1097/MOG.0000000000000151. PMID: 25594887. Maes M, Leunis JC. Normalization of leaky gut in chronic fatigue syndrome (CFS) is accompanied by a clinical improvement: effects of age, duration of illness and the translocation of LPS from gram-negative bacteria. Neuro Endocrinol Lett. 2008 Dec;29(6):902-10. PMID: 19112401. Ellen Johanne Vara, Jørgen Valeur, Trygve Hausken & Gülen Arslan Lied (2016) Extra-intestinal symptoms in patients with irritable bowel syndrome: related to high total IgE levels and atopic sensitization?, Scandinavian Journal of Gastroenterology, 51:8, 908-913, DOI: 10.3109/00365521.2016.1157890 Roman, P., Estévez, A.F., Miras, A. et al. A Pilot Randomized Controlled Trial to Explore Cognitive and Emotional Effects of Probiotics in Fibromyalgia. Sci Rep 8, 10965 (2018). Frändemark Å, Jakobsson Ung E, Törnblom H, Simrén M, Jakobsson S. Fatigue: a distressing symptom for patients with irritable bowel syndrome. Neurogastroenterol Motil. 2017 Jan;29(1). doi: 10.1111/nmo.12898. Epub 2016 Jul 11. PMID: 27401139. Ventura MT, Polimeno L, Amoruso AC, Gatti F, Annoscia E, Marinaro M, Di Leo E, Matino MG, Buquicchio R, Bonini S, Tursi A, Francavilla A. Intestinal permeability in patients with adverse reactions to food. Dig Liver Dis. 2006 Oct;38(10):732-6. doi: 10.1016/j.dld.2006.06.012. Epub 2006 Jul 31. PMID: 16880015. Coucke F. Food intolerance in patients with manifest autoimmunity. Observational study. Autoimmun Rev. 2018 Nov;17(11):1078-1080. doi: 10.1016/j.autrev.2018.05.011. Epub 2018 Sep 11. PMID: 30213697. Pietschmann N. Food Intolerance: Immune Activation Through Diet-associated Stimuli in Chronic Disease. Altern Ther Health Med. 2015 Jul-Aug;21(4):42-52. PMID: 26030116. Triple Therapy Probiotic Bundle Need help or would like to learn more? View Dr. Ruscio's additional resources Get Help