# Dive Deep Into The Effects Of Mycotoxins Transcript

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## Introduction to Mycotoxins

Welcome to Mold, Mycotoxin, and Chronic Illness Summit. I'm your host, Dr. Ann Shippy. And today we get to talk Mycotoxins with Dr. Jill Crista. She's a naturopathic doctor, bestselling author, educator, and she is on a mission to help practitioners and patients heal from very complex illnesses.

Thank you so much for joining us. Thank you for having me. This is such a treat to get to charities. Yeah, we're showing up on a Saturday. Yeah, I love how you said.

Let's talk about our favorite topic. Well, it really is such an important piece to getting patients well, and I know you're so like minded and you like the data.

You like digging into the science and then coming up with solutions. Yeah, Yeah. Actual practical solutions. Imagine that. So this is perfect because I'd love you to describe what Mycotoxins are, and then we'll start talking about why we need to worry about not just grouping them into one category.

Yeah, so mycotoxins are more can make us sick with spores, spore fragments, chemicals. So the off gas chemicals of happily living metabolizing mold. So we can test for one of those called MPA or mycophenolic acid.

And that's just I kind of joke. I call them mold farts because they're just like, off gassing. Yeah. And you may or may not smell them. Yeah, right. So those they're just part of the the living metabolizing, you know, oops, my bad kind of thing if it bit off gas.

But mycotoxins are so unique. They're made in tension only by the mold to compete out other species. So other types of mold, other bacteria, even some other like in between bacteria and parasites that like to live in water damaged buildings.

And they're made intentionally to harm those other things, to kill their cells. It's like biological warfare between organisms. Yes. And they our military has picked up on that.

And there are militaries around the world using these mycotoxins as biowarfare. Yes. So are they dangerous? Yes. Is everyone affected by them? Yes. Is everyone affected the same?

No way. So and you see that. And I really love that you said everyone is affected by them because I believe that, too. I think, you know, it's just like any it's like air pollution or any other type of environmental toxin.

There's a spectrum of how we respond to every. It's not good for anybody. Right. Right. And that's the people that say, well, I'm not affected by them.

I'm like yet until you have the car accident, until you have the stressful thing, happen it at work, until you have a food poisoning that throws off your immune system, there's something that is going that, you know, you're building your car and that's just leaving you more susceptible.

So everyone is affected, but everyone has very different susceptibility to it. So it's like dose duration, previous exposures. Nutritional status. Are you a good detox or a bad detox?

Are you constipated? Are you not all of the are you a kid? So kids are much more susceptible than adults. So there's lots of different factors that make that susceptibility.

I'm glad you brought that up because that's an important theme in this series, is looking at how the mycotoxins affect children differently and more profoundly.

And so any parent like we have to be looking at this to keep our children safe, it's as important as, you know, having a roof over their head and having locks on the doors and getting them to school.

Providing a safe environment is so important and so important. I mean, it's right up there with lead. We wouldn't have our kids drinking water out of lead pipes.

You wouldn't have them breathing air from a moldy building. It's the same risk factors. So mycotoxins for me, they get they get a lot of attention because of their intention is to harm something.

And they're only made they're very expensive for mold to make. That's very hard for mold to make these.

## Why Mycotoxins Affect Everyone Differently

It costs them a lot of energy. So they only make them when they're in a competitive environment. So when someone says it's okay, I only had one mycotoxin come up on my test.

I'm like, If you had that mycotoxin, you likely have a layer of others underneath that because these aren't made in a vacuum. These are made because there's other species around and it's trying to gasp from the other species.

So we will find more mycotoxins as we detox somebody that's normal. That means we're doing a good job. But so that idea of like, it's okay, you know, it was only Aspergillus and Penicillium that they found, I'm like, that creates quite a dangerous mycotoxins set up because Aspergillus and Penicillium are in competition and they will make mycotoxins and those mycotoxins are carcinogenic.

They cause birth defects, they're linked to all kinds of problems. They are toxic to genes, to cells because again, they're intentionally made to harm another living thing competitively.

So we get I don't know if you're hearing a lot from patients, some people saying, well, you know, I heard that Mycotoxins aren't that big a deal. Now, actually, my seeds are the thing we have to worry about that's Misinformation or malinformation.

If there's often a misuse there, there's mycotoxins. They're. They're just eating them. Yeah. And so you're going to see more endotoxin and Actinomycetes in a gray water spill.

So like a sump pump that went bad or something like that where there's bacteria in the water already, but you're not necessarilynot going to see mold because it's the same growing conditions.

So for me, Actinomycetes are important to being paying attention to. Same with Endotoxin. They're different. And endotoxins are just the the cell wall of the bacteria in that area.

And Actinomycetes they emit like an antibiotic. So you could be breathing this water damage, building air and be kind of getting the same symptoms as if you were taking an antibiotic.

So that's where we get yeast overgrowth. That's where we get some of the gut disruption. So they still, though, are not doing it on purpose. Mycotoxins are made on purpose energetically expensive, made to harm something.

So so like you had said in in the beginning that we've scared everybody. This is very treatable. Yeah, thank you for that. That's why we're here to provide solutions and understanding.

Exactly. And you had asked, you know, what about why are we why should we not see them all the same? There are things that are the same in all of them.

They all deplete mitochondria function. They all deplete glutathione in the cells. So when people say, oh, that mycotoxin doesn't detox through the glutathione pathway, that's fine.

And it is depleting good it down in the tissues which is making mitochondria go. You know, and then you feel like you are constantly walking up an escalator, going down while the rest of the world is like riding the escalator, going up, you know, I mean, it's just like mitochondria dysfunction and depletion is so fatiguing.

And that doesn't that's not just muscle. That's how does our brain work, how our metabolic functions working, our digestive juices are all of the things, you know, making hormones, all the things that our system needs It's part of what we need to be able to have that the body replete itself.

Yeah, Yeah. So all of them do that. All of them are neurotoxic, which means toxic to the nervous system. This can affect the gut. And even if you're not eating them, that's the destruction by insurance companies is, oh, if you just stop eating mycotoxin food, this isn't from the environment at all.

This has nothing to do with your health issues. Total destruction, total, totally. Your environment matters. And even if you're inhaling them in animal studies, we see that it affects the gut wall so you don't have to be eating them to have gut wall effects.

And if they're neurotoxic, that gut wall runs off neural programing. So there's reflexes and all of this neural neurological communication that's happening and then communication from our vagus nerve up to our brain that says we just eat protein, we just get fat, you know, send those juices down so we can digest more gets in the way of all that communication.

So then it creates this whole malabsorption problem. And that's a big problem because then you get more nutrition on the question. Maybe you can't, you know, you can be eating your food may not be taking it.

In it very well. Yeah. It gets to be such a vicious cycle. Totally. Yeah. And many of the mycotoxins are genotoxic, meaning they change the genes and rewire you to be immune depleted.

Why would it do that? Because he wants to move in is going to impact all of the things that you would need to detoxify. It's going to mess up your detoxification pathways through your kidneys, through your liver, is going to change your gut microbiome and gut wall, which is where our immune system is.

## Shared Effects on Mitochondria, Gut, and Immunity

And then just in case that wasn't harmful enough, it's going to rewire your genes to make your immune system not function. You know, I. Mean, is so profound and how many different mechanisms that mycotoxins affect in the body.

It's just it's actually kind of amazing that we can even survive with them because it affects so many different aspects. What are we? Yeah, and that makes it really hard to recognize.

So that's how it's getting missed all over the place because depending on the mycotoxin that you're exposed to or the mycotoxins soup and depending on your own susceptibility and I'm not Schumaker trained, but I've heard him say this is a multi-system Multi-symptom illness, and that makes it really hard to pick up.

And that's when I developed my questionnaire because I was in practice working with Lyme patients and I'm like, How can I get? I found out a lot of my chronic Lyme patients had mold and that was the reason they had chronic Lyme and they weren't responding to the Lyme treatment.

I thought, how can I get to the mold answer faster? And so that's when I created the questionnaire that I have in my book. It's just like I was trying to find a way to quantify how do I figure out if it's Lyme or mold or both, and how do we get to the mold thing faster?

Because if we're not addressing the mold, we're not ever going to make progress on the chronic Lyme. So the symptoms are completely variance. And they overlap.

So in such a complicated fashion. And do you find a lot of times that the line goes into remission when the once the mold is dealt with, you answer. To do yeah. Do yeah, yeah, yeah, yeah.

When, when the body's not being immuno compromised like oh when is let's get rid of it. Yeah. Right. It can recognize it, it can pull it out of hiding, it can do all the things it needs to do to get rid of it.

Yeah. Yeah. So then some mycotoxins though each one kind of has its special sauce. It's special thing that it does. And Dr. Neil Nathan and signature feature.

Yeah. There you go. The signature feature. Yeah, I show sizes. That sounds tasty. We don't want. Yeah, the restaurant. Right? Yeah, we are. Yeah. Yeah. So, Dr.

Neil Nathan and I are working on a questionnaire project right now to He's helped me refine my questionnaire, and we're going to be doing a study that takes a look at the questionnaire.

And hopefully from that, what we can determine is, first of all, is the questionnaire valid? But also are there signature symptom patterns that we see with certain mycotoxins being quite high at that time?

That time your detoxifying it that time you are loaded with it. And that'll be interesting to see because I have some fact sheets where I've kind of taken that from my practice and I've listed the symptoms that I most commonly see with that type of mycotoxins.

And in deep diving into that, I learned that, you know, certain mycotoxins that we see a lot. I've kind of I kind of have like little nicknames for them because they all kind of do something a little bit different on top of the stuff we talked about how they're common.

So like okra toxin is a persistent mycotoxins. That's what I'm calling it. It's the persistent. Zarella known as an endocrine disruptor, but it's so much more than that.

And glitter toxin. One of my jokes is that it lays the red carpet for fungus to come and take over it. It just opens the doorway to fungal infection. And so we can talk about each one of those.

I mean, I think it's just really good for people to realize that each of these are a little different, not only in the symptoms they're causing, but then what we do to get that healed from that plan.

Yeah. So let's dive in. Let's start with okra toxin there. So okra toxin being a persist or what that means is it has really high affinity binding to albumin, which is a protein in the blood.

And I'm explaining this for your listeners. I know you know this stuff. You know. You're doing great. So this protein in the blood, we have to have a certain amount of it to maintain our blood pressure.

It also carries around things like calcium. And so it's a delivery system. Unfortunately, it delivers ocher toxin because it has such a high affinity.

It's like a magnet, like a super magnet to that blood protein and such a super magnet, it'll actually bump off things that albumin should be carrying around in the blood.

So that's where we get into the pots picture because the calcium and magnesium can't get delivered to tissue. So the whole goal is to try to get that out of our body.

And the mycotoxins have a couple of pathways to get out of our body. When we breathe them in, they go into our bloodstream immediately and they can get carried anywhere in the body.

That's how we can see symptoms anywhere. The way that we get it out is we can pee it out, which is why we can test urine Micro toxins. So the kidneys are the job there.

We can package them in bile in the liver, and that is carried to the colon where we're supposed to poop them out. Unfortunately, we recycle a lot of that bile, so we have to interrupt that with binders or things that block the reabsorption, like taurine.

It's a beautiful amino acid we can use for that purpose, or we can do some detoxification with our gut microbiome. So Oka toxin preferentially uses the kidney pathway and then the gut pathway.

And then third is the liver. So focusing on liver detoxification with ocher toxin is sort of like, you know, not paying attention to the primary pathway.

Primary pathway is kidney. And it will if it can't bump it off in the kidney because we have to have some amount of this albumin in our system. The kidneys will take the damage, so they'll take it into the kidney tissue so that it can contribute some bio flavonoids to denature it on the off the albumin, put that back into circulation.

But unfortunately that Mycotoxins is hanging out now in the interstitial tissue of the kidney, which means the kidney, the stuff of the kidney. So that's how we get kidney cancer.

That's how we get nephrotic syndrome, that's how we get IgG nephropathy from okra toxin. That's how we get a H resistance, meaning the the kidneys stop listening to a hormone that says hold on to water because it says, no, I'm not going to hold onto this.

This is a problem. We got to get in the toxin here. So bio lab and points are the like the super power for okra toxin and two favorite ones. Yeah. So the research shows it Z is and then and asked is anthem so any I figure because there's not a whole lot of research on these mycotoxins like there's no human research because we can't purposefully poison someone to figure out what to do to get you better.

Because if it's a poison, just don't, don't expose the poison right? So we have to take animal research and translate that into humans or molecular.

## Using Symptoms and Questionnaires to Detect Mold

But when I saw the two were Zayas, Anthony and ACS, and then if if you have a patient who is or anyone listening is allergic to fish, that may not be a source that you can tolerate because a lot of that comes from their sources, there are plant sources, but I'm like, those are common because they're both orange, they're both the color orange.

So all that beta carotene would work. I'll bet that vitamin A would work. I'll bet Quercetin probably a little bit, because it's close to that. Probably a little bit of lycopene would work.

So that's what I will do for my patients who can't tolerate the anything in the Z isn't the nasties. And then we just go for beta carotene. And it is amazing to see that upper toxin level just, you know, just drop because we're now supporting the way primary way that the body wants to get rid of it if therefore.

Yeah, so that's my big tip for Okotoks. Yeah, that's a. Great wildlife annoyance by I'm going to, you know. Which are you going to be taking any way they they're helpful for so many aspects of the body.

Yeah. And you know a lot of people with Okotoks and have skin problems because of this whole we've been not you know, the poor sister part of it and because the kidneys are are trying to grab as much of the bile flavonoids in your blood as it can to So it doesn't take on too much damage and the skin takes a hit.

So if you can support these five flavonoids, I have people who chronic psoriasis, you know, age spots, these kinds of things, acne, acne, rosacea. When we get the bio flavonoids going, we get the orchid toxin out of their body.

Then the skin says, thank you. You know, I needed that. You know, it does by night. But of course, body, in its wisdom, if it's being poisoned, it's going to prioritize getting rid of the poison over having beautiful looking skin.

Well, and I think a lot of times it's engaging the skin to try to help with whatever little detox that can that the skin can provide, too. Right. Right.

So when I see that, you know, every time with psoriasis, you know, and so I'm glad you brought that up because it is an autoimmune. So the immune system's gotten confused and attacking the skin.

But I think it's it's partly because the skin has really been trying to be that fourth or fifth pathway to get rid of the toxins. Absolutely. Yeah. Yes, that's I love it.

And so you can explain your toxin tips to we go across let's actually attack them all. I just love like I want this to be so actionable and helpful for people you know, that they can take this and run with it.

Well, and I really love how you're, you know, pulling the science and then have an action plan. So that's great. Yeah. Thank you. Yeah. I mean, we that's the best we can do.

And, and with functional medicine and naturopathic medicine, we know these tools already. So when I see these and then I'm like, Oh, I know. How do you I know the dose.

I know you know, So I know the safe area, you know, I'll use up to 24 milligrams of that, no problem, because I have a, I already have a friendship with these things.

So it's just. There tools in your toolbox that you use for other things already. Yeah, right. Yeah. So, Gleb Toxin. Behind us does Anthem like great data.

Rate. It's one of those supplements that if you're going to like do a top ten or top 15, like what, what what do I want to prioritize putting in my body.

It's a really great thing to be prioritizing for prevention and anti-aging and all those things anyway. Yeah, Yeah. And then you think, Well, how is it really helping with anti-aging?

It's probably detoxifying you, you know, helping You just get rid of all of the load. Yeah. No, I. Mean, great connection. Good job. That's good. I should get that on my.

It's a good point. You know, even if I don't know work or toxin it probably good to put in my rotation. Yes, for sure. Prevention. Yeah. Thanks, doc. Well, I'm having so much fun with this because I'm, like, getting takeaways from every every one of these sessions, so this is great.

Thank you. Yeah. Yeah, that is the fun thing, isn't it? I love to watch the summits, too, and I love to, you know, attend medical conferences, obviously, but with summits, just the contemporaneous, chatty, you know, so much comes out.

There are so many pearls where it's just like, oh, my gosh, I, first of all, never would have thought to ask that question. And then second, like I, I didn't know that and about this or that.

So, yeah, thank you for doing these, putting the. Puzzle pieces together. It's so fun. And now just makes us all better. Right? There's there's so much to know.

There's so much to learn. No, I could just nerd out every day and the practical part and seeing patients get better is the even the most fun. So great.

I know there is no problem getting out of bed in the morning. You know, it's like, I love what I do. Yeah. All right. So, Leo toxin. Leo Toxin lays the red carpet for fungus, particularly aspergillus, which is the one that can become pathogenic and infective in our lungs.

They're seeing it in sinuses. Dr. Dennis in Atlanta, he's seeing Aspergillus fungal balls making mycotoxins in the in

the sinuses. And I am sure it's also colonizing the gut.

I mean. Absolutely. Or even infecting the gut, you know, because we're able to see, you know, when people pass a biofilm, it is.

## Ochratoxin: Kidney, Skin, and Detox Pathways

And I want to get a fungus test of these things. I haven't done that yet. But, you know, it's just like a whole load just takes off their body, you know?

So I'll tell you, just lab core has been a great way. They do a four week stool culture. A lot of times they can pick up the gut Aspergillus with that and it's usually covered by insurance.

Oh, fantastic. Thank you. Yeah, that's a great tip. Yeah. So easy for patients. They don't have to deal with test kits or anything, so. And they're not perfect.

But a lot of times if it's there, they will pick it up. Don't get it. Okay. So thank you for confirming that, because I'm like, I know it's in the gut.

I know for sure every time you swallow, you know, if it's in your sinuses, it's in your gut. And of. Course. Yes. Yeah. Especially if you think about how mold grows.

It's like contiguous taking over. Right? Yeah. And if you're if it's neurotoxic and immuno toxic, you know, if it's in your sinuses and able to make mycotoxins as well.

And even if you're breathing like the toxins, we know it's affecting your gut ball. So of course, it's going to be easily easier for it to set up shop.

Mm hmm. So the glial toxin is a a virulence factor, which in in normal person language, that means it's assisting the Aspergillus in being more infective and able to infect.

So it can take it from a spore to an active, you know, where it's invading from just a surface level. It can take it to an invasion and that's where we get infection rather than colonization.

And glial toxin is really tricky because the the it creates if you have a high blow toxin, it creates sort of a Goldilocks situation with sulfur. And what I'm saying, it's sort of this middle window.

If you don't have enough sulfur, you can't kill the aspergillus if you have too much sulfur and not like a high amount of sulfur. So if you have that middle where Goldilocks likes it, that can actually be helping the Aspergillus make more glial toxin.

So glial toxin or sulfur fuels, Aspergillus is ability to make more glial toxin. It's a highly unique mycotoxins because it has disulfide bonds, which is similar to our IG three.

So if you have patients that have a low subclass, IG three, that's actually a toxin problem. You don't even have to test it. We know it. I know it from my practice.

I'm like, Oh my gosh, all these kids with hypo gamma glandular anemia, like I need to see subclasses. If I see that IG three low, I'm like, You're in mold.

I got to get you out of mold. So this disulfide bond, when you take just enough sulfur to help the Aspergillus, but not you and just enough to not overwhelm the Aspergillus and help your immune system kill it.

Because too much sulfur is toxic to Aspergillus. It's like it gives it way too much of its favorite food. So there's this weird little thing that you have to do with glial toxin.

If I see glial toxin on any kind of mycotoxins testing, it gets my attention first because we can be, unfortunately, making the glial toxin situation or the ability to make the toxin situation worse if we try to address some of the other mycotoxins.

So we're going right into glutathione on NAC Alpha lipoic acid. These are all fire based molecules that contain sulfur. We see a lot of patients with high glial toxin, not tolerate sulfur.

And typically also then what you see is they don't tolerate oxalate foods, salicylate foods. This is the sulfur component or connection. So if I see high glial toxin, I take my patients off sulfur foods, I take them off sulfur supplements as much as possible, get the bile flavonoids on board and get the antifungals going as quickly as possible in any way that we can get it.

Nice pattern in the nose if it's, you know, anything. Because if we can get that aspergillus low down, then we can come in with the sulfur containing dials and they feel better.

They can tolerate the foods they can eat, garlic again, they can eat onions again. And the reason they couldn't is because the glial toxin was or the sulfur was helping the aspergillus out before.

So their body was saying, Don't do this, I don't like it. Our bodies are so wise. And then when we get the antifungals on board, all of a sudden you can eat these foods again.

So what are your favorite antifungals you mentioned and nice that nasal spray. What else to is helpful? It's it's all over the board. It depends. If they handle plants.

I'd love to have plants as the foundation. And because they have the wisdom, they have the you know, they know the kind of the instruction booklet and then that drug can come in with a single action and you've got now a wide and a high activity.

So I love to start with time timers. Vulgaris It's, it's, you know, like a garden lead for people. And it is amazing because it has this property where it actually stops the the Mycotoxins production of the mold.

So what model do if you start to add antifungals we see that if you give Amphotericin B to Aspergillus, it will increase its production of a toxin to defend itself.

It's getting attacked. Yeah. Of course it would. Right. So that's it's vital weapon. Stop doing that to me. I'm going to poison you. What time does is it comes in and it shuts down that mechanism.

So if you pre load with time, sometimes you'll just need the time. Typically I use time and then, you know, for a couple of weeks and then add in some other plants like oregano or neem or powder, aka It kind of depends on what they have going on.

Powder Argos Great for deeply embedded mucous surface somebody who started this or like this, we're talking to you. I'm like, you keep of Arko. I love that I actually got to taste some kind of aka when I was in the rain forest years ago.

Where did you go? And for us. It was way, way deep into the Amazon in Peru, like it wasn't overnight boat trip on a rickety. Boat with about 16 people.

I can't believe looking back, I did that. Now, but it was amazing to be with the typical people and have them show us some of the different plants that I was there.

## Gliotoxin: Aspergillus, Sulfur, and Antifungal Strategy

It's the medicine they use, right? So many things. Yeah. Not just the fungus. Oh, my gosh. We have so much to talk about. I did a botany study in the Peruvian Amazon, so I guess when you meet these plants, like.

Like I'm just chilling. I have Chile to. Oh, my gosh, they're just so benevolent and they're so present, You know, they're they speak to you. They are there and they're. Yeah.

So I just love I love to pick the plant, kind of the person. A lot of times I'll just kind of go to my medicinal shelves and be like, okay, who wants to play? You know?

Well, and for those of you listening, this is how pharmaceuticals were involved. And even, you know, back to some of the these non toxins, you know, that's where penicillin comes from and it's where, you know, micro phenolic acid is being used to do immunosuppressant for transplant patients.

So with the whole pharmaceutical industry is based on these, you know, the mechanisms of plants. But when we use them in the whole plant, a lot of times they're much more in alignment with the body than just taking that high dose.

One mechanism. There are lots of mechanisms in the plant. So it was wanted to clarify. That in case we sounded a. Little out there. Yeah. So well-put.

And yeah, I can definitely sound very out there because I like that, because. I think I do the same thing where I really, when I'm making these choices, even, you know, whether it's a medication or whether it's a, you know, from. Our.

Anti fungal nutrition status, like a I don't do the same thing for every person. I just kind of tune in and see what I think is going to be the most gentle but effective. Yeah, right.

And then they all have their different mechanisms and those mechanisms are pretty well studied now, which is nice. You know, you can kind of get the idea that a clove is more resinous.

It's going to act like a powder, aka it's going to act on that really. MUKASEY Thick phlegm. And there's a whole lot of research that can on the alkaloids and on the components of the plant that the pharmaceutical companies said oh, here's the active component that's antifungal.

We'll make a drug out of that. But like you said, it was so well put. You know, when you have all of it, then the body knows what to do with the debris and the detritus from the dying and off and the anti antioxidant and anti-inflammatory part.

And, you know, it's more than just that one action that we need to do. Cleanup crew. So the plants have all that stuff in it. Yeah. It sounds like you have a really similar approach to like with the pharmaceutical approach is just like one mechanism but especially with these I'll just call them fungal infections or fungal overgrowth.

I find that I have to hit multiple pathways to really get the infections down. Yeah, definitely. So I like to that's, you know, my kind of secret is with Clio toxin, start with time because we know that the Clio toxin is probably being made in house, not just in your house, but then the Aspergillus gets into your sinuses, into your gut, and it's going to start making it in house.

And so we can take the time and say we're going to shut down the mechanism for you to be able to make more Clio toxin so don't have to burden the body that gives us a window to start some of the other ones.

So quite commonly, like a really sick patient, I'm using Ivy Neistat or a intranasal Neistat and Itraconazole with an a blend of plants to kind of hold the space if there's garlic.

And my favorite plant to use for that is garlic, because it's safely used with every single antifungal pharmaceutical. There have been great studies on that.

So, you know, I use a lot of tinctures so I can kind of just mix and match what I want, which is really I feel very lucky. Is that how you do the time to sit on a tincture, whether it's.

Tincture capsule, Tincture, I find works better because I think that it doesn't the capsule doesn't open up early enough in the process to catch where the first seeding of the Aspergillus ended up in the small bowel.

So I love to use the tinctures or glisser. It's for kids and then just, you know, say, here's your two weeks of just time now here's your bottle for the next, you know, period of time, which is usually I mean, it's fungus can take a while.

They're very tenacious. It might take three more months. So here's your next bottle with thyme plus, you know, and then we'll add whatever we need. If it's going to be like for women, it tends to be more things like sage, rosemary for kids, you know, more of the resins, like the cloves.

And again, just whatever their symptoms are, if it if they're cibo, I throw oregano in there, if there's, you know, powder arco, if there is asthma or more deeply embedded mucus.

And so it's just really, you know, mixing and matching with the patient. Not everybody likes to take the tincture. So there are some blends there. Yeah, they're a lot easier.

And they are. Yeah, Yeah. If you if you can tolerate them and just like have the conversation in your head, the this is really helping to get my microbiome back.

Into. The positive rather than oh my God, this is so strong or tastes so bad. Yeah, right. I know some kids from my practice when I run into them, as you know, young adults, they're like, Oh yeah, we remember when we had to take those tinctures, you know, like you become part of, like the the, the mythology or the stories of that family because they're like, oh, yeah, we are parents.

You have to pay us to whatever you're feeling. I want to get you better. That's awesome. Yeah. Yeah, that's kind of good. This is so good because I think this is such an important piece of of understanding the impacts of mycotoxins.

So for those of you listening, like, just if you were wondering at all, like, is this real to, to be able to delve into this level of detail and science and making the connections is like it just there's it all doubts should be removed what what's happening though is because this is such an evolving understanding in science, you get brilliant people like Dr.

Crista putting really important puzzle cases together that help us all. Yeah, Yeah. Oh, gosh. Thank you so much. I'm going to zero in on. Yes, that's okay.

Mine too. Yeah. So I'll just recap on the toxin. Short term, no sulfur diet, getting on the antifungals as soon as possible and then moving into high sulfur to try to compete out that basically it makes the Aspergillus for blow up swell and blow.

So that would be the high sulfur things are styles is category alpha lipoic acid and acidosis and glutathione and those would be the things that can can help with healing to get all that glial toxin out and the Aspergillus presence.

Yeah. Yeah. And then when you're on glucose and then biomass takes of many, many more Mycotoxins. Yeah. Yeah. I'm sorry I cut you off. Oh, I was saying, I think this is so much more common than we think because it is a little challenging to test for.

You know, you don't always get the, the easiest way to test, to see, to find the colonization. Right. Right. Yeah. That's there's definitely some limitations on the testing strengths and weaknesses with every lab, you know.

So really Yeah. Yeah. The zero unknown is an undercurrent disruptor, but it's so much more than that. It's also toxic to the heart muscle. And that's what a lot of people are missing.

And they're like, you know, focusing on the estrogen part, which is really great. You know, I love that people are paying attention. The fact that this micro toxin is acts a little different than these other things that we've been talking

about called mycotoxins.

So helping the estrogen piece through i3c and that's into three carbon I'll think about I was and then so I don't even know what Jim stands for. I couldn't even say the word metal above it.

But yeah, they're like very similar molecules, a few molecules apart from each other and using both assists because some people can't move the the pathway and so they need help on both sides of that metabolic pathway to get the estrogen detoxified.

And there aren't great studies on calcium right. I went and I, I dug and I dug and I dug and I couldn't find anything more recent like 1993 or 95. So I know that some people are using it and are seeing the level go down, but I don't know if it's as efficient as either easy.

And those are. What I usually use a combination. I'm kind of I'll just start with the with the dim, but then I just find people get where they need to go quicker.

If I do the combination. And follow the labs. Yep. I love it that you typically don't research. Thank you. That's what I do. Yeah, I just. I just get on these like a like, on a scent in our room.

Just like I want to really know, as I was seeing in practice that it wasn't coming down as quickly. And I was thinking, Oh, it's estrogenic. I'll use calcium d glucose like things aren't moving.

And what if I did it like my estrogen dominant patients I them and three C and things are moving faster. So then I went out to the research just to see is there validity to that?

You know, first I practiced on my patients and then did the literature dive later to understand and I don't know what that is. I'm sure people who really understand that metabolism, estrogen metabolism, people who specialize in women's health, I'm sure they could just right now tell me exactly what that is. But that's what I'm seeing in my.

Eyes from what I see, I just think that the recirculation of the estrogen, the reabsorption is diminished with it. CDK Oh, reabsorption. That makes sense because of the mineral and it's already in the system.

It also binds to albumin with high affinity, not as strong as ocher toxin, but it's a binder as well to the albumin. And so using the the things I was saying, you know, the ast is anthem's use and then with zero unknown because you know you want to turn that off but there's a little bit of a hack there, which is because they're also known as also toxic to the heart muscle.

We can use Hawthorn which contains a lot of those bile flavonoids and nourishes the heart muscle. And what I love about Hawthorn is that it helps the heart feed itself first, because that's the heart doesn't do that.

It feeds itself. Second, I'm not sad, you know, feed our hearts first. Well, I think what's especially. You know, as parents, we often are like it. It's kind of how we do things, where we're in that giving mode more than the receiving mode.

So right now. That would. Be. Just what the heart does. Right? That's what the heart does. And so I. Don't know that Hawthorn so. Oh, I love Hawthorn.

Hawthorn, I like to use it in a solid extract. Ideally I find that it's more effective that way than in a capsule. But you know, if someone's like you can't do the taste to me it does taste like you're eating jam, you know?

So I have a lot of patients who are just like, Oh yeah, I'm picking my own hawthorn in on just licking it off the spoon. But for kids some are like, I don't know if I want to do that, then I can use rose hip solid extract or rosehip sirup.

## Zearalenone and Heart Support

And what that's doing is that's giving the lycopene, which we know has its own micro toxin protectant, but it is also full and rich in those bio flavonoids that can help adventuring.

So you can kind of take is that multiple mechanisms of action and multiple modes of benefit with reducing the total pill count and you know how many things someone has to take.

So I will combine that that combined I three seen them with some hawthorn salad extract or rose hips. If it's a kid who is like, you know, I don't, I think it's really yummy but I'm a weird herbalist.

So, you know, there have been some kids that don't like the Hawthorn, that Hawthorn specifically has that heart feeding mechanism where it's and I always get it wrong, but I know Tropic and Chrono Tropic and what it's doing, but it's helping the heart muscle have a more complete contraction and then expansion to feed itself first.

Beautiful. So if it's, if I have a kid who doesn't like the Hawthorn, I have the parents try to mix it in with the rose hips so that we're at least getting some hawthorn so we can prevent the myocarditis, if you like, for.

Oh sorry. Finish up and then I'll ask. You know, as you know in the last few years there's something circulating that's pretty hard on the heart. Extremely.

Yeah. So I've been just plowing through Hawthorn. Yeah. Okay. Do you have a brand that you like? Because that's a new one for me. Hmm. The herbalist and Alchemist is one.

And then wise woman has. I think they still have it. I'm just looking on my shelf real quick. My wise woman. One is still in stock, but those are two that I use.

I think I'm right now because I'm doing mostly telemed. Then people can get Herbalist and Alchemist and. And it's just a matter of if you're male or female for that one, like if you have an exposure.

It also really bad on men because not only it estrogenic it is toxic to this or totally cells in the testes so you get actual destruction of the testes.

So when in families when I a kind of a classic picture is mom and kids are sick dad is not dazzle irritated that's is this really more and I say let's test your testosterone and if there's zero in on in the house the testosterone is below 300 easily.

Yeah. And so when I when they say it's not affecting me, I'm like, yeah, it is actually. And it's going to show up in loss of muscle mass, insomnia, irritability, you know, libido issues, hair loss, that's not what any guy wants, you know, So it's affecting them, but not in a way of like an allergy.

And that's the that's the thing we have to get people over is that we hear about mold allergy, but it's so much more than that. And if, you know, we've just talked all this time about these mycotoxins that's not an allergy thing.

That's a toxin. Yeah. Yeah. Which I think, you know, I think most people understand about lead now. So yeah, it's just as toxic or more than an LED or cyanide or this.

Yeah, it's just like common things that you hear about wanting to avoid. And to me, these are even more toxic. And those things went. Because they do.

They're genetically toxic. So it's a, it can be a heritable trait basically to be immune deficient. Yeah. And just sets kids up for autoimmunity. I mean there's a huge my second book is on Pandas and Pans because mold is so often the that core exposure is so often a contributing factor to developing pandas and parents because mycotoxins because they're fat soluble, they like to go to the fat of your tissues.

And one of those is our brain. Brain bone marrow gut, you know. Yeah. So these kids, then they're totally treatable. You know, once it becomes autoimmune, then we're dealing with a little bit different situation.

But, you know, you can kids can be treated for mold. I mean, I have a whole class called mold in kids, because not everything we would do for an adult we do for kids.

You know, there are certain things we want to make sure we're not detoxing them too hard. You don't bind them too aggressively because could cause nutritional deficiencies.

So there are certain things that we need to modify when we're working with kids, but it's completely treatable. So once you've been exposed, I mean, you're living proof of that, you and your family.

Yeah, that's I think that's really what's inspired me to, you know, be able to hold space for people. As you can tell, you can recover and be even better than you were before you got sick.

I guess So. Do you hear this from families? I hear families say, well, now that we're past it and we're looking back, this is probably the best thing that could have happened to us because we declutter our life, we simplified and we became so health conscious that, you know, it probably is setting us up for not having the diabetes and hypertension and all those things later, You know.

How do we feel that that's the case when we implement what we've learned and stick with it? You know, the lifestyle changes and the most important supplements and really learning better how our detox pathways work.

Yeah. Yeah, right. Are there any other mycotoxins that you find, particularly important or interesting, any of the terracotta scene family, any legit comparison?

Is there anything else you want to add on any of the other toxins? Yeah, the Oh my gosh, those get scary. So I was okay. Yeah, but the TEDGlobal scene is it's from ketamine, which is a water loving mold.

So if you have good tell me I'm in your in your environment, you have a water problem and it doesn't mean flood that means a consistent slow drip somewhere that can also be in your refrigerator filter.

I tested a bunch of refrigerant refrigerator filters and I found ketone me in them. Took them out. Way. Yeah, that's a good tip. It's like. So I have a little video on my web, on my website.

I do these short little video blogs like a minute or less. I try to keep them, you know, because my brain is a real thing. It's a very real thing. It's a very.

Yeah. So I, I was just curious. And so I tested a refrigerator filter because I was in the mode of, you know, test everything so I can learn. Where to send it.

I work a my inspector, so I just said, I want to test this, send me some stuff, what do I need? And she said, just I'll send you some swabs and some containers and whatever.

## Other Mold Sources and Practical Home Detection

So I, I had started testing galore on that and they, so I found ketone or tattoo globus and keto medium in the filter and then I actually found could tell me I'm not try to go in on that first one so and I'm like call my parents.

How long have you been using your filter? And they were like, oh, two or three weeks. I'm like, Can I test it? Or byanyima? So I tested there's ketamine, I tested a friend's ketamine.

I keep testing. Like I said, I think it's coming in the water. Or do you think it's already present in the filter? Where is it coming from? I have. No idea.

But there is no standardization on any of those refrigerator filters. First of all. And so I think because it's stagnant, tell me and loves stagnant water.

So it's not going to be one from a flood and then it's dried up. It's from a drip, drip, you know, slow drip, trapped water, which is the situation for a lot of our families because they didn't know it was the problem.

You know, like the refrigerator line in the back of the fridge can just have this slow drip leak. And it happened to my job. And my. God, not enough. But you could actually see it behind the wall or under the floor or anything.

But it was creating a pretty massive meltdown. So that's why I try not to even connect the water filter. I recommend that people don't because what are you you're going to run it through a filter that has ketamine, which has a micro toxin called Cheddar Global Sun, which runs which can cross the blood brain barrier.

It's one of the few any often is a trick. The scene can do it too. A lot of them can ride our olfactory bulb back up to our head, but could try to go all of a sudden can cross blood brain barrier.

That's the one that made me so sick. And it was in my air conditioning system. And I thought, this being in Texas, it's like we just get condensation in our AC systems.

You know, they running through the attic. Even if they're insulated, they just condense. So now. And so if you're not managing that, that's the thing is like maintenance is the key running dehumidifier and.

Having the right size air conditioning system. And so that actually dehumidifiers. Mm hmm. Yep. There's so much science to it that we know, you know, that, that I now don't know.

H back I think is a is a very important specialty to have. Right. And and hiring the right people. So I had somebody have a huge Aspergillus problem in their coffeemaker, they had like one of those really fancy $3,000 coffee coffeemakers and it was full of aspergillus.

Your eggs anything it has setting water. So that's why I just I tell people don't even hook up the line to your fridge. Just go old school ice trays, you know, because anything that has sitting water, we have a problem.

CPAP machines. I had a patient with dementia completely lately cured by making sure she cleaned her CPAP machine. We got her a new one after it was tested with ketamine and Aspergillus and high endotoxin.

Very high endotoxin because they're she's like, that's bacteria probably, you know, from herself that was able to kind of set up in her CPAP. So I like the system.

It's called so clean, it's an ozone cleaning system for CPAP. It does a. Really good tip. It's so great. It's a closed system. So you don't get ozone out into the atmosphere because that's toxic to lungs.

So it closes it in and it runs it even through the fan and the air handler part of it, because that's where a lot of the mold is, is on the little fan and it will degrade valves and things like that.

So you need to know there's a risk factor that it's going to age your CPAP machine a little faster that's not going to get dementia. Yeah, So well. That's not a bad idea to replace that something regularly.

Anyway. I agree. Don't need to be an annual purchase. Yeah. Agreed with that the so clean. No people are. It's testing really nice and clean even years later.

Yeah great I know this simple like and it's such an easy system. You take it off, you plunk down closed. You don't even think about it. So awesome. So what other places do you look for Mold when it's not obvious?

One of the baby bath toys. Yeah. If they have a little hole for, you know, the aeration, that's a place for mold. And then baby's taking a bath and mold and mycotoxins and goes right through the skin.

These mycotoxins can go right through the skin very easily. So checking baby bath toys, making sure you don't have anything that has that little ear hole.

It that if it's a plastic, it's just hole. And I've had parents, you know, cut them open and send me pictures as like yet there we go. You know, there it is.

And then really great. Detective work. That's a I I'm obsessed. I think it's probably a problem. Because it really is. You know, sometimes it's challenging to to find the sources.

Yeah, I know. And they can be so weird. And now are those I mean, a baby bath toy is a big deal because it's a little person with a big, you know, bath water and and our skin is so efficient at taking in mycotoxins.

But, you know, some of the other ones like the Michael Rubino has greathe has a great Instagram: themichaelrubino. He has all these little things where they found mold like at the bottom of your if you have toothbrushes if you have a toothbrush holder like that should be, make sure that's drying out.

You know, that should have air in it, not a holder with a contained airspace because that's wet every day. And I just had one with my toilet bowl cleaner.

Oh, yeah. Yeah. Mm hmm. If it had a lid over the top of it and it like I palin this when I just wanted it to look nice. So it was totally sealed. Yeah. And then there you go.

It'll grow and a little tip too is people say, oh, doesn't every toilet tank end up moldy? And I can say in, in my experience so far, if your toilet tank grows mold, you have mold in your house somewhere.

It's not natural for that to grow mold in most situations.

## Resources, Training, and Closing Remarks

You know, there may be a situation where you haven't used that toilet for months, and maybe that makes sense. But now if you've got it growing with, you know, the frequency of flushes that happen in most family homes, there's mold in the environment and there are a lot of spores available to that.

Yeah. So just little things like that. And trichothecenes My they're their main thing that they do is protein synthesis inhibition. So I like to use the any kind of amino acids that we can get into their body, like the essentials either branch chain, amino acid or a mixed aminos because it just all the systems in our body are enzymes and everything run off protein off amino acids.

And if they're not, if the trichothecenes are sitting there saying, no, you can't make that protein, that's going to slow healing, especially the gut wall.

Yeah. That's a great tip. It's just such an amazing source of information. I feel like I could just talk to. You all day if we could. We could. And then we can talk about Peruvian Amazon.

That's going to be fun. Yeah. Yeah, definitely. So I know you are just on such a mission to get information out to the public, but then also to health care providers.

So for anybody listening in either of those categories, how do they find you? Yeah, they find me at drcrista.com that's D R C R I S T A.com and I have courses for public and information for the public a fact sheets on mycotoxins and then I have a doctor training course they can become more literate you get CME for it and everything's amazing.

Congratulations on that. I did not know that that's a big deal. That is it being medical education has to be approved by you know the the more allopathic model.

So the excellent job. Yes. Thank you. And then I have a short course coming up called Updates and Mold Related Illness, which is going to be a few months yet.

And then I have a training course on Pandas and Pans for practitioners as well. That's my other passion project as a mama of kids with pens from our mold.

I did that. Yeah, well, it's. Been there, done. That makes you really learn it to the to the deepest level. Yeah, you got it. Well, thank you so much for your wisdom, your huge heart.

Your brilliance, and. I know this interview is going to help a lot of people to better understand what's going on with them and how to help. Great. Thank you so much for the invitation. Thank you.