Euthyroid Sick Syndrome, CIRS and Glyphosate Toxicity Transcript

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Introduction to the Interview

Welcome everyone. I'm thrilled and honored to be interviewing Doctor Stephanie Sun. She's just been a pioneer in so many wonderful connections on the role of glyphosate and how it's impacted our health, especially in the modern day chronic illnesses that we see today.

And what we're going to be talking about is a new topic to share with, her community and our community today about how you thyroid sick syndrome series, which is chronic inflammatory response syndrome and globally toxicity are all connected.

So welcome doctor. Senate. It's really an honor to see you again. So glad to be here. Thank you. So let's just dive in. This is an exciting topic and something that we were chatting before that I've seen clinically, but always trying to understand as a natural acquisition, what are the underlying causes?

What might I be missing and why are we seeing so much more of this than maybe years past? But what are we talking about? When you're talking about youth thyroid sick syndrome?

Yeah. So that's a very interesting condition in which your thyroid appears to be perfectly healthy and your T4 levels are fine. But but when you look at T3 it's low and RTT reverse T3 is high.

So this is two ways that the T4 can get converted into T3 two different enzyme called diode. And they see in the iodine is two. So the thyroid releases the T4.

And then the liver turns it into both of these things artesian T3. But when it when the liver sick it makes too much. Our T3 and the Aki three actually not only doesn't it's either receptors but actually blocks the receptors for T3.

So it works even more than just not being T3. It's worse than than nothing. So it's actually suppressing, the T3 from getting to the receptors as well as of course disappearing the C four.

So you have both less T3. And since we can't get to the receptors. So it's really a pretty drastic effect.

What Reverse T3 Means

The availability of thyroid hormone of course thyroid hormone is very important for mitochondria. It induces mitochondrial proliferation. It makes the mitochondria make more mitochondria.

So it gives you lots of energy. So when you have when your T3 is low, especially when you are T3 time, you feel very fatigued, you know, so you're just exhausted and, you know, and you have a bunch of other symptoms too, but it's basically feeling crappy, sort of feeling like you've got a bad case of the flu, you know.

Yeah. And that's many of my patients. Re one of the primary reasons that they come to see someone like myself is, you know, fatigue, low energy and low vitality.

And many doctors might, you know, we're trained to think, okay, low energy, look at the thyroid. But we could be missing this. Reverse T3 is untested.

Is that correct? Yes. You won't you won't know it. You'll be puzzled because it'll look like a thyroid is fine, but they don't appear to have a healthy supply of low rate hormone.

And it's because the organ, the liver in particular, is responding incorrectly to the thyroid hormone. So again you know going deeper. So that's one you know again discovery to understand okay.

Why somebody could be fatigued and why they have this imbalance. But you know for our perspective we're thinking okay why is the body doing this right.

Why is the liver sick. Why is it making the reverse T3. And you've, made some connections of how Michael Jackson from water damage buildings can contribute to this phenomenon.

And I haven't heard this yet, so I'm super excited to hear this. And not just from the buildings, but also from the food. So you have a lot of problems with mycotoxins in the in the corn because of, fungus growing on the corn as it's being stored.

So there's a lot of issues there with, you know, there's Aspergillus and of course, there's even candied. I mean, all these fungi, fungi are causing, trouble, and they're producing these mycotoxins that are very toxic.

And in fact, when those mycotoxins get oxidized by EPA, oxygen is they get even more toxic. And so the interesting thing is the connection between the mold and the glyphosate, which is actually a few threads.

One is that Aspergillus, for example, is very capable and capable of metabolizing glyphosate. So not only is it not affected by life is it doesn't have the sensitive enzyme that the microbes have, but it, it can chew, it can chew it up and disappearance.

So so that's a feature, you know, if you've got mold growing in your body, it's going to get rid of the glyphosate, which is nice. But on the other hand, the mold cause it's its own problem.

So if you're getting a lot of glyphosate then the mold is going to the bacteria are being killed off. So that allows mold to really get get going. And the mold produces these toxins.

Or you could be eating toxins from food that's been exposed to by it because it makes it. There's a lot of fungus diseases right now in various, plants, various crops.

They're having a lot of trouble with fungi, and they're using a lot of fungicides, too, which are also toxic. So and that's I think also because glyphosate is making the plants more or less resistant to the fungi.

And, and the reason a reason why there's less resistance because of a weak immune system. Glyphosate is really doing a number on the immune system. It really messes it up. And I have a whole chapter.

I have a new book on blackberries eight, and I have a whole chapter in that book on the gut and another chapter on the immune system, how Gallagher's a message system.

Mold, Mycotoxins, and Glyphosate

So, so you have trouble fighting off these fungi, and you have trouble dealing with mycotoxins because glyphosate is disrupting the enzymes in the liver that detoxify them.

And so one is, we would assign a lot of the mycotoxins, get glutathione related, and that makes them water soluble. And then it can clear them so the urine get rid of them.

And another thing is, is, oxidation, you know, you have these, cytochrome P450 enzymes that also have the same idea as all these enzymes that are detoxifying toxic chemicals in the liver, typically put things onto them or change them in ways that make them more water soluble.

And this is what allows them to get out, because they can then pass through the urine, get removed from the body, and when those enzymes are broken, then these other enzymes get get going with the with the product that isn't getting changed.

And in particular this is a oxygen is convert them into even more toxic metabolites. So you really go into a

downward spiral. The collaboration between glyphosate and the toxins from the molds are causing a really serious problem with liver toxicity and then liver toxicity, and also depleting the gall to find glyphosate has been shown to both deplete glutathione and, end up with a lot of oxidized goodness.

I am so good at. I mean, it's a great antioxidant really important in the river, keeping things healthy, particularly for the mitochondria that keeps mitochondria healthy and when there isn't enough to fire, and when the glue of that's there is oxidized, you've got a problem.

And so your mitochondria actually start spewing out reactive oxygen species. And the thing goes south. I mean, it's like a downward spiral because the mitochondria actually wreck the cell, wreck themselves.

And, you've got mitochondrial deficiency in the liver. And I think that's a consequence of both the mycotoxins, which are also damaging mitochondria, and that if you say working together, it's, you know, every time I hear you speak, it's like all roads lead to glyphosate, and then you keep on me, you know, thinking about all of these mechanisms because as you speak, you know, I see a lot of patients, who've, struggled with either water damage guardians and have a micro toxin exposure that route or, as you said, through the food supply or through, I mean, suppression and fungal overgrowth in their body.

And, you know, we use a lot of glutathione alone, to help eliminate those mycotoxins. But again, not looking a step deeper, like virus in the body, clearing those, themselves.

Or why was the body more vulnerable? Definitely accumulating. So I think that's a really interesting next lens. And then the I never had heard, either the Aspergillus connection and that Aspergillus, you know, actually biologically might be, helping us on some level.

I know that's interesting is that I think it's doing better because it can clear the glyphosate is kind of a feature. And I think that's true of other, toxic, infections as well.

That because they can clear glyphosate, they get a big edge over the other species, but then they also perform a service because they help to keep the masses at levels lower than they would otherwise be.

We, talk a lot in biological medicine around terrain theory. Right. And so it's not about the bug or the toxin, but the kind of the body's response or the, you know, interaction with that.

And that, you know, for me, makes a lot of sense because, yeah, the I believe even though our bodies are up against so much, we're always trying to move towards health or be there's a wisdom inherent in moving us towards health.

And so it's like, what what is you know, what is the, biological maybe benefit in some way of allowing this, to grow in the body versus others? And, you know, we saw that in the early days with Candida and Mercury.

There's kind of a relationship like. Exactly. Yeah. Here you toxicity, you have higher candida and we treat both and people get better. But, yeah that's a really interesting angle.

And so, have you in your work when you have looked at, have you done any exploration of types of mycotoxins, of have any connection? I just when I did my, I wrote a paper, a chapter on this, and I looked into the literature and just kind of found some names of some might, of some toxins and how they're metabolized and how they become more toxic, that kind of thing.

So I know about okra toxin and aspergillus and it's, it produces, what's it called? It's okra toxin. And then aflatoxin also toxin. Open toxin. Yeah. Those are big ones. Yeah, yeah.

And with, you know, nowadays, doctor, some of with these labs being the more affordable and accessible patients can actually measure their mycotoxins burden in the urine in Great Plains Labs, which has a glyphosate test.

Yes. Toxin test too. So anyone who's listening should do both. Right. If this is something I think that's really a good idea, you can get a sense of whether they're collaborating, whether you've got a problem with both, in which case, you know, you sort of know some things you need to do get get out of the building if it's toxic and, stay away from the glyphosate, you know, the organic food don't don't get near the farm yards.

Wetherspoon agricultural land mines. So, you know, we have this, you know, we're looking at there's so many different, physical effects of glyphosate and mycotoxins can have it, in the body.

And we're going back, you know, really focusing on the thyroid because I think this is really important, as you said, because I think a lot of thyroid, dysfunction or hypothyroid gets misdiagnosed or undertreated, you know, and so in your research, have you, uncovered different approaches that you feel like a clinician or a patient who's listening, who was like, oh, that's me.

Glutathione, Sulfur, and Detox Support

Should investigate, how to really uncover, you know, a roadmap to heal this process in their body. I mean, I know we're talking about mechanisms to think about, but just curious, from your perspective in your, research.

Yeah. Well, I think glutathione is central. And of course, that also means sulfur central and the sulfur containing, you know, acid. So I really think, people need to pay attention to their diet, not just in terms of certified organic, which is absolutely essential, but also try to move towards a high sulfur diet in particular, actually, particularly animal based protein, because that has, a lot more of this, sulfur containing amino acids and plant based protein.

So that makes sense. Animal, you know, based foods more interesting, I think in that case. And, and so the sulfur, you know, getting enough sulfur. And what's interesting is this whole mechanism of this, T3 inverse T3 activity that happens in the liver is quite, quite fascinating.

And I was quite well, you know, just delighted with what I found because it went back to heparin sulfate, which is something that I've always been interested in.

Way back when I identified a heparin sulfate deficiency as a key marker of autism in the brain. Deficient heparin sulfate in the brain ventricles. Very, very interesting.

That's a direct lead to autism. We've done experiments with mice where they've given them a defect, a specific defect defect particular to the brain ventricles, where they can't make heparin sulfate.

And they develop all the features of autism, mouse features of autism. It's quite fascinating. And they found deficiencies in heparin sulfate in the brains of human autistic people after they died.

And then postmortem, they found they had, inadequate heparin sulfate in their ventricle. So that's very interesting. So it happens often is important everywhere.

But in the liver, it's extremely interesting with regard to this reverse T3. So it becomes quite fascinating to look at these enzymes and where they, where they operate and how they're managed in the cells.

Because reverse T3 you know, the diode three diode image three versus diode. And these two have very different mechanisms of import places where they work.

I mean, and within the cell they operate very differently, which is quite fascinating. Whenever I see something like that, I'm like, okay, why is this?

You know, I'm always asking why. And so the diode three is actually it's excreted and it gets into the these clathrin coated pits that are, surrounding the cell.

And these class encoder pits actually get endocytosis. They get brought in and I sort of off clathrin based

endosymbiosis where they get pulled in and then, and then they recycle.

They go back to the memory, back and forth to the membrane. They're delivering things and doing stuff. But the, when they're when there's not enough heparin sulfate, they get stuck.

They don't go in, they stay on the surface and they get flat. They get sort of flattened out because they're supposed to be sort of like this. And then they come in making little, you know, containers, but instead they get on the surface and they flatten out like this, and they stick to this stiff membrane.

The membrane is stiff because it's not in a separate sulfate. And so, so, so interesting because then this dye or three sticks around outside the cell where it's grabbing all the T4 and converting it into three.

So it prevents the T4 from having a chance to become T3 because it takes it away before it even gets inside the cell. That's a light bulb for me. I never knew why the body did this, you know, it's so fascinating.

Yeah, so it's different. It's trying to do what it knows how to do, but it's basically impaired and stuck in a position where, anatomically, it's not able to do its physical, you know.

Yeah. Where if we moved it from the surface and brought it inside where it wouldn't have been able to do it, it wouldn't be able to reach the T4. So it couldn't do anything.

Just be stuck inside the cell during this, you know, during this cycle wouldn't stick along the surface for very long. So would it be able to convert it very much of the T4 before it would disappear into the cell?

It couldn't get at the T four, which is outside. You know, whereas the, the T3 actually operates on the T4 inside the cell. So the T4 has to come in and I think the T4, I forgotten it was T4 that's brought in to the receptor.

I don't know. I don't know the details of that particle. It's really, really complicated by this. But I know that the, T3 operates inside the cell and is, actually two producing T3 operates inside the cell, and the IO3 is at the surface removing the T4 and converting it into T3.

And if it gets away from the surface, it can't do that. And it gets stuck on the surface with the reduced heparin sulfate and the really interesting thing is that, you know, heparin sulfate, since this requires energy because you need ATP to activate the sulfate, you've got to stick the sulfate onto the heparin.

You have to attach the sulfate using this, energized version of the IV sulfate that, we've called paps that, we need to key molecules to make one Paps molecule.

So when you can make a lot of Paps because you have defective mitochondria, you can't make a lot of fat from sulfate. The that's also connected. So when the mitochondria are weak, the happen sulfate gets deficient.

And when that happens sulfates deficient, the life of cells become defective because they need to happen. Sulfate in order to produce their, acidic environment that allows them to recycle damaged stuff.

So when you have, you can't clear cellular debris because, the lysosomes are defective because there's not enough heparin sulfate to help them do their job.

So it's a it's a really complicated sort of story with lots of threads, but the, but the, T3 encourages mitochondrial, proliferation, encourages the mitochondria.

That's the thyroid hormone. The active, encourages and strengthens and makes more mitochondria, makes the cell very energetic. So when it repeats so it's blocking the T3, you can't make very many mitochondria and you've got a kind of vicious cycle.

But the other thing is that the T3 suppresses the conversion of cysteine to have into hydrogen sulfide gas. TFA

suppresses that. So the T3 gets rid of the T3, gets rid of the suppression and allows it to convert cysteine and the hydrogen sulfide gas, which you need because you're trying to make sulfate.

So it sort of allows you to make the sulfate that you need to become energized. But then the enzymes that do that get blocked by glyphosate. So there's like, you know, things get stuck partway through because there's all these toxic chemicals that are messing things up.

And so the RCC is trying to correct the situation, but it can't it wants to get the sulfate going so that the mitochondria can get going. The whole thing depends on everything, depends on everything else.

And the whole system is blocked at the at the level of the heparin sulfate. And then basically the thyroid deficiency also because through this iron becomes a source of cysteine, it cysteine is one of its three amino acids.

And when when you break down glutathione you get cysteine which can make sulfate. But if you break down with the science, you lose the fight and you don't have enough antioxidants.

So you're kind of juggling all these things that are defensive, struggling with the situation, not knowing how to how to cope, and the best way to cope.

If you can't make a lot of energy is to shut your energy system down, and then you end up being exhausted. Yeah, it's like the body, you know, it almost puts the brakes on itself in order to try to catch up.

But it's a vicious cycle because it doesn't have the building blocks to catch up. Right. And so, yeah, it's really interesting. And really the key of it I think, is the glutathione iron deficiency.

Because if you can boost the good of iron, then you can boost everything else. So that becomes the source for the sulfate. And of course you need to have the organic diet to get rid of the toxic chemicals.

So, yeah, but the good is that goo found is central. And that means sulfur central. And and then the sulfur containing amino acids and of course glycine as well, because glycine is a, it's glutamate.

Glycine.

Heparan Sulfate, Mitochondria, and Sulfur Metabolism

And, that's good of iron, you know, and all three of those amino acids are really important to keep a healthy good amount. And you need to have a working system that makes a good thing, which is also problematic with glyphosate.

So, you know, I think liposomal glutathione is a good idea if you, if you have any, enzyme problems, you know, you could just take cysteine and acetylcysteine, but if you've got blockages that you can't make them from an acetyl system, which could happen, I think also with respect to glyphosate.

So maybe the mycotoxins, I don't know whether they mess that up as well, but they might, yeah, I know so many connections. Right. And what do you I mean, I know we've talked about this before, but a lot of the patients who are listening, you know, their mind is going down to, sulfur sensitive, sulfide sensitive.

I don't tolerate glutathione. And so maybe, you know, again, we have lots of ways to approach that. And there are different forms and other things to do.

But I'm just curious if you've uncovered mechanisms for these increased, sensitivity to sulfur compounds for some patients. That's definitely glyphosate related.

And I write about that in my book, actually. And it's and it's connected to the enzymes that, that convert sulfate. Sulfide is really toxic. It's very reactive, you know, cause a lot of damage.

And the microbes in your gut have lots of enzymes that either take it up to sulfate or take it down into organic, amino acids. I'm talking about the oxidation state.

You know, sulfide can go up to sulfate, which has four oxygens. Sulfide has three, or it can come down to hydrogen sulfide gas, which is just, no oxygens.

H2 is or it can get assimilated into, sulfur containing amino acids. So there's a, a similar to a sulfide reductase, similar a similar to our sulfide reductase enzyme, which starts with sulfide and turns and turns it into methionine.

It combines it to a carbon organic molecule. It makes methane. And I have a paper that shows that glyphosate severely suppresses the activity of that enzyme in E.coli.

So I think and also the papers that have shown methionine deficiency in plants that are exposed to it, say it also disrupts the uptake of sulfur into plants.

So when you eat plants that have been exposed by the state, they have low sulfur content. And that's something Don Huber showed. He showed very drastically reduced levels of sulfur uptake into the issues of the at the plant when it was exposed to glyphosate, a sulfur sulfur.

And that's a question that for all the sulfur stuff. But so the so it's a similar choice of if reductase is suppressed by glyphosate. And that makes sense to me because it has it has a higher dependency.

It has this critical glycine dependency that I talk about in my book. It makes a lot of sense that that enzyme would be messed up by glyphosate. It's a member of this class of enzymes called viral proteins that I write about in my book that I think really hit hard by glyphosate.

So those enzymes, it's one of the enzymes that, escapes in the sulfur system that's going to mess things up so you don't get it when you eat sulfur, when you eat sulfite, you don't have this enzyme working properly.

Then what happens is, is it, a bug called, the sulfur Vibrio, which produces hydrogen sulfide gas with this dissimilar to sulfide reductase, which is not affected by coal, actually, because it doesn't have those dependencies that I just mentioned.

So that one works and that enzyme turns it into hydrogen sulfide gas. And that gives you the bloating. And then the hydrogen sulfide gas, of course, it's very if it's too high, it can kill you.

Hydrogen sulfide gas is actually very, very interesting signaling I guess it has a important role in biology. But when there's too much of it, like everything else, carbon monoxide, that's the same.

You know, carbon monoxide can kill you if you hang out in the garage with the car running and hydrogen sulfide kind of like that. It can also kill you if we get too much.

But usually, you know, get enough to kill you, but you get enough to cause trouble, and it's, it's very light. It's a gas. So you can just move right up through your body, get into your brain, and cause brain fog.

So you're producing hydrogen sulfide gas from sulfide, because of the disrupted enzyme. And you're not making the critical methionine that you need which can then become cysteine which can then become, good to iron that hot channel.

It's broken because of, these defective enzymes. Is that, bacteria normal flora or does it overgrow in the present? Yeah, it's just too much different.

I think it's a normal, it could be present in the gut and not cause trouble, but when there's too much of it. And overgrowth. And for Vibrio, it's also, something, Wadsworth.

Yeah, I forgot and, by the fellow. Wadsworth. Yeah, that's another one. Yeah, that that also makes the sulfide gas out of sulfide. And those two become problematic.

When that other enzyme is broken. And the sulfide, of course, also is toxic. So if the enzymes aren't working, you get too much sulfide. That's going to cause a lot of oxidative damage and mess up your gut, I don't know.

And within, you know, of course, a lot of gut dysbiosis, you know, glyphosate for all the reasons. And then, within our patient population, there's, presentation of small intestinal bacterial overgrowth to some of these bacteria migrating to the more, the small intestine.

And we measure, you know, different gases in the breath that the bacteria in, like methane and hydrogen and hydrogen. Right. That that's and also a very interesting topic.

And that relates to glyphosate as well, because I mentioned the viral proteins and there's a bunch of enzymes that the gut microbes make that take, what you just mentioned, all these hydrogen containing gas is methane and ammonia and hydrogen sulfide gas and even hydrogen gas, all those gases that contain hydrogen, there's enzymes that oxidize them and make them into organic matter.

So methane can go to methanol, and methanol can go to formaldehyde and formaldehyde can go to formate. Those are all different steps of oxidation of that original C-H for methane molecule.

And each one of those steps involves a flavor protein. So all those proteins are being suppressed by life. Is it normally the gut microbes have a very interesting system of making gas with, you know, it's hydrogen containing gases and then turning them back into organic matter using these enzymes that I'm microbial specific, like we don't have those enzymes.

We can't do that. We depend upon them to make those organic molecules for us. And the really interesting thing about it, I just have to say this, and I wasn't going to get into deuterium vegetarian, is so fascinating.

And I want to, you know, gotten into it lately. And, that whole process of making these gases and turning them back into organic matter is a way to shake off the deuterium so that those organic molecules are going to check and depleted.

And that makes them extremely healthy nutrients. So deuterium is a heavy hydrogen. And it's a natural. It's it's found in nature. All over the place. And our body has discovered sophisticated ways to keep it out of mitochondria.

And when deuterium, when there's too much deuterium in the mitochondria, they get sick and they can't make as much ATP. The HPA pumps get broken by these sort of pulling deuterium atoms that come in there and wreck the pumps.

And they can't make as much ATP. And they start releasing these reactive oxygen species, which is really bad. So the mitochondria get self damaging from this excess deuterium, which is there because they're enzymes that keep it low are messed up.

And those are also flower proteins. So the several proteins play many important roles, but they're all sort of connected to deuterium. I think they're able to actually select for hydrogen over deuterium in the reaction. They're very clever.

They've got this really curious biophysical arrangement that supports proton tunneling within that protein. And the deuterium molecules are really bad at tunneling.

So they don't make it to the other side. They don't get into the product. It's really cool science, but these enzymes get busted like electrons in a very specific way.

That exactly matches what I call my glyphosate susceptibility motif. So it's all written up in my book about these five

proteins. It's really fascinating.

Yeah. Like just another connection. Right. And I'm glad you brought up deuterium. Our community is I'm learning more and more, as well as their, labs and solutions and things to, you know, uncovering.

This is a really a missing piece, especially in people struggling with mitochondrial dysfunction or cancer. Absolutely. Really important. In fact, this is deuterium depleted water that I'm drinking because I was like, what are you drinking?

Like water. Yeah. Like water. Yeah. It's one of the few things that I don't normally take supplements, but I really believe in this one. I think it's terrific and I'm so happy that it exists.

Yeah, I know, I'm glad.

Deuterium, Diet, and Mitochondrial Health

I know that our mutual friends have really pioneered, you know, making, this really a part of the conversation, right in the modern illnesses that we see today, because it's like, you just explain so much complexity, right?

And there's, so many factors, but there's these, common denominators of where the body breaks down. Right. And so this is a nice thing to come to resolution, given what we're you know, what, you know, all these factors that you've just shared.

So, yeah, it's really interesting. I think it's actually pretty simple, but I if I try to explain it to people, they kind of think it seems like over their head, but for me it's it's elegant really, but it's just so sad how much everything gets wrecked.

Like, like I say, is really scary. And then, and of course, working synergistically with everything else, you know, the mercury becomes more toxic. The everything else, you know, all the other, herbicides and insecticides become more toxic because glyphosate disrupts the liver's ability to detoxify.

And that's what's happening with the micro toxins as well. The mercury and mercury needs to be sulfate. So if you've got a lot of mercury in the teeth, that's going to become much more toxic because you can't, sulfates.

Yeah, that's a big part of our work, helping people safely remove those and detoxify them. I'm just circling back for one moment. You've mentioned the proteins, and the enzymes, you know, excuse me, you know, many mechanisms there, and especially with the mitochondria.

Is there any, other kind of, way to support that process or mitigate that dysfunction? Obviously. The, glyphosate detoxification and removal and avoidance strategy.

But the deuterium depletion in itself, does that help to recover those? I wouldn't think so. And in fact, you know, I've always liked a high fat diet.

I've just always felt it was healthy. And even animal fat, high animal fat, you know, butter, lard. And I eat a lot of those, those foods, and even animal based protein, as I mentioned, for the amino, for the amino acids itself, like occasional acids.

But a high fat diet is a low deuterium diet. So that's extremely interesting. As soon as I learned about that from Laszlo Burrows, I was, I was just spellbound.

I was like, oh, this is why, you know, it's like, so simple. It could be a really important aspect of a high fat diet, which is that it's a low deuterium diet.

So that's a nice way to kind of reduce the amount of deuterium you're exposed to by simply eating, tending to eat

fats rather than sugars, you know. And of course, there's actually I think fruit is very toxic because it's high deuterium, which is interesting.

I know the fruit thing. I can never you know, there's so many people on different sides of the fruit camp, you know, but it's good. Yeah. But I mean, I understand that, you know, and especially maybe if we weren't in modern life, our threshold for that would be more tolerable.

But I think just given, you know, our bodies, yeah, are just so overwhelmed and our levels are higher than nature intended that we can't maybe enjoy things that we might have.

Otherwise, no, I agree, I think that many foods that are perceived to be toxic, wouldn't be if we didn't have all the toxic chemicals alongside them, because those chemicals just completely do even alcohol, you know, because if you have healthy enzymes that can metabolize ethanol, it's actually a really super fuel.

You know, it's very, it's like sugar, very easy to metabolize and turn into energy. But but the problem is that if the enzymes that, that metabolize ethanol in its products are poorly, are working poorly, then you just have these, you know, reactive molecules hanging around causing trouble.

So that really a lot of the toxicity of things comes from, insufficient, enzyme activity. The enzymes are sick because of their glyphosate exposure. And I think that's related to alcohol.

I think because, you know, methanol is extremely toxic. And methane to methanol. I'm sorry, am I getting this right? Methanol. Formaldehyde. Formaldehyde is very toxic. Right.

And so the enzyme that converts formaldehyde to form, if that's broken, now, you've got a problem with toxic formaldehyde and the way you can, one way you can help to fix that is to drink a lot of ethanol, because it competes for the enzyme that makes the methanol that goes into the formaldehyde.

So by virtue of distracting that enzyme with this other alcohol, you don't get as much formaldehyde. And that can. So I think, you know, even alcohol alcoholic disease could be connected to, this need to get rid of this formaldehyde, which, you know, and your enzymes and your microbes are making this, this methanol you can't upset.

You can't stop that. So then you just try to defer the enzyme. So get it distracted by the ethanol so that you don't end up with this very toxic formaldehyde, which is just really curious.

Yeah, definitely. I know it's like human behavior. There's a, you know, you know, just even oversimplifying sometimes, you know, people have these sugar cravings or these, you know, whatever.

Not healthy things that they, you know, mentally understand, but physically, there's some drivers coming from a biological, driver. Right? You know, whether it's like overgrowth of yeast in the gut or these enzymes.

Exactly. The yeast really want sugar. So when you've got yeast, they're going to get your brain to think you want to. Yeah. It's so fast. The microbes are in control.

I mean, they really do talk a lot with the brain, and they instruct the brain how to how to react. And it's just really quite fascinating how you get driven by, you have drives that you don't understand that are driven by your microbes.

So it was very fascinating to see that clinical practice all the time. Right? You know, and I, you know, and I think that's another, you know, kind of, perspective.

Right. Especially nowadays where we're in this, whatever we're in that we're focused on one microbe or one bug. And even in my world, you know, we get very focused on, you know, certain, pathogens when we have to look at it, you know, in this ecosystem and community that we're really meant to live in harmony with, you know, microbes

and viruses and fungi.

But these other factors make us less resilient and more vulnerable, and things grow in ways that they shouldn't. And, you know, so it's not thinking like, oh, there's just one invader causing all this havoc.

It's this complex network. And the more I learn, of course, I treat pathogens, but I do feel it's the toxicity that has, just overwhelmed and overburdened us to change our response.

That otherwise we would have recovered from, more quickly. Yeah, I think that's true. And I think that, you know, we experienced disease not so much because of the bugs, but because of the chemicals.

And then the bugs are actually trying to fix the problem. I think in most cases, their their goal is to keep you healthy because you're their home. They don't want you to die, right.

But unfortunately, they have to have these do these things that cause these symptoms that are nasty in many cases in order to fix a problem, they're trying to fix a problem and they're struggling to because they don't understand how to deal with diversity that nobody knows how to deal with and say they're just so, so difficult.

You know, just that whole change, a whole field of infectious diseases, right? If we looked at it from this angle. So doctors, so, I mean, you I mean, I think I've known you maybe eight years now and you've been just ahead of the curve with, glyphosate.

I mean, do you feel, I mean, obviously a huge awareness I think has shifted in that time. But do you feel like is industry catching up, or do you feel like we just have a long way to go?

Still, I know I wish I could see into the future because I keep trying to predict when is it going to fall. I keep believing it's going to fall in my lifetime, and I hope that's true.

I have I'm very happy about Mexico, and Mexico has decided to, completely abolish, glyphosate by 2024. So they're phasing it out. America's US is very upset with them for that, which I find ironic.

Glyphosate, Disease Trends, and the New Book

And, and, you know, all these lawsuits, I think that that really was a real driver bringing public awareness to glyphosate with all these, non-Hodgkin's lymphoma lawsuits.

And there were three that were spectacular wins. And now there's, like, tens of thousands of people waiting in the wings for their day in court. And that's quite frightening for Bayer and Bayer stock has collapsed.

And, and then of course, there's various, bottom up, activities involved with banning glyphosate in local, in local communities like, you know, banning the use of placards eight on the schoolyard to ban it in public places.

I think local communities, people are putting in the effort to talk to their, you know, governments, local government to get these changes to happen. And it's becoming successful in multiple cities in this country.

I'd love to see a state, you know, like California decide to ban. I have to say that would be so awesome. And maybe there will be a state. It probably won't be California because they use it.

You know that. We'll do that right? Yeah. There you go. So, you know, I think, Europe is also making efforts, and various individual countries in Europe are trying to ban it.

And then there's this kind of higher level EU community that says, no, you can't do that. We're getting the same effect in states as well, where some city will try to ban it, and then there'll be a government rule at the state level that says the city can't do that.

So that's very frustrating. That's happened in Hawaii too, with the individual counties trying to take action. And then the main government of the state is saying, no, you can't do that.

Even when they pass laws, they basically disable the law. So it's very, very frustrating when you see things like that. There's so much control. Monsanto worked very hard to control the top, you know, and then to disabled the bottom, disenfranchize them.

And so that's worked spectacularly well to keep us poisoned. And and the US and EPA, FDA, they're just completely useless. I'm so annoyed with them. It's very, very frustrating.

I still have hope that there could just be one person in, in the government who has a powerful role, who would just decide, we're going to do it, you know, or really bring it on to the radar screen and get them to be aware that this is a serious problem, because we're all just getting sicker and sicker and there's no end in sight.

And, and I think that Covid 19 is also much worse in the countries where life is heavily used. And I really think that's a complete connection, as I said, I have a chapter in my book on, glyphosate suppression of the innate immune system.

And it's when your innate immune system is weak that you have to bring in the big guns. And we get all this, over a, overzealous, adaptive immune response is what's killing people with Covid.

You know, it's not the virus, it's the response to the virus. And that response is necessary because the innate immune system can't clear it. And I write about that in my book as well.

Yeah. No, I, I agree with you. And, you know, I think the track that we're I mean, I think that is an intention to hold it, you know, maybe one person in government because, you know, people who are in these roles, they're not I mean, their families are immune from, you know, the illnesses that we all see in our communities.

And so it just takes maybe a connection or insight and understanding that this is, you know, the, the cause of modern is today, you know, so I'm going to I'm going to put that in my intention as well doctor.

Send it in then tell us about your new book. So I want to oh I have it here. Okay. So yeah, please. One of the very few copies at the moment. It's going to come out July 1st.

Perfect timing. Yeah. This is the summer just around. And so perfect timing. So toxic legacy. And what do you go through in the book. Yeah. So I, I talk a lot about glyphosate as a glycine analogs.

That's the thing that really is fascinating to me. And I think it's the reason why one chemical can cause so many diseases. And I argue in my book, you know, we've seen the data, all these diseases going up exactly in step with glyphosate, you know, autoimmune diseases, neurological diseases, of course, autism was the one I started with.

Perfect match. You know, the rise in autism in first grade and the rise in glyphosate usage over the previous four years. So from the age of two to the age of six, in that child's life, perfect match.

Stunning correlations. And of course, you know, these charts started coming out and Nancy Swanson was the one who started doing this chart. She's a friend of mine.

She's awesome. And, you know, people said, oh, correlation doesn't mean causation. I mean, they always find an angle to say to let people like, oh, good, I don't have to worry about that. You know, when you get that kind of stunning correlation with all those diseases.

For me it was, oh my God, how is this chemical getting so smart? How can it do all this? How can. And they were saying that you have the one can chemical possibly cause so many diseases.

Well for them they just dismiss it. How could it for me I'm like okay, I got to figure this out, right? And that's when I

really came upon this idea. Well, and actually, Anthony Samsa was the one who suggested to me we knew it was a glycine analog and he said, maybe it's getting into the proteins, but stick during the coding process, you know, because you have the DNA code and that's what tells you which amino acid to put next on the string.

And so when it says glycine, grab glyphosate by mistake and you stick it into the protein. And and that became really an moment for me once I started looking at that, it became very clear that it makes a huge amount of sense, you know, and that it could explain how one chemical could cause so many diseases.

And that's how, for example, the fiber proteins get affected. And it's really very similar to what's happening with the enzyme that it famously disrupts in the chicken pathway, which is called SP synthase.

And that enzyme has a glycine at the place where it binds phosphate from PPD, and that glycine, if you replace it with alanine, which is a very small change, but it's a different code then all of a sudden the enzymes completely insensitive triphosphate.

And and that's very, very interesting because if you save the grapes, it's just replacing the glycine in the enzyme, sticking its methyl phosphate in the spot where the phosphate is supposed to go for the substrate, you can't fit anymore.

It's just blocking the door, and then it can't do its reaction. And that's what's happened with the fiber proteins as well. Yeah. And that and then you mentioned we started the conversation on glutathione on.

Right. So glycine being part of the why on. And then exactly glutathione is probably getting contaminated like I said in fact that glyphosate causes the increased production of an enzyme called GT gamma Tem or transcript of this, which breaks clarifying down into individual amino acids.

And that's part of why black as it gets by, why good vine gets depleted because you're running of the sugar and breaking it down. But I think it might just be because it recognizes it's a sick version of the enzyme has to be disassembled and hopefully rebuilt with glycine instead of black.

So yeah. Well and then collagen. Right. So collagen you know, collagen has huge amounts of glycine so long strands of every third amino acid being in place.

And, and collagen is you know, we've got a lot of trouble with college and college. It's not working correctly in our joints, in our bones. And we've got a lot of joint pain and bone pain and, you know, easily breaking bones and having a bone grabbing on bone because the college, it's not holding water the way it should.

It doesn't have the proper flexibility and tensile strength. So we're just really, really messing things up with the collagen, I think. And that's causing a lot of these, diseases that are characterized.

You know, we see so many people suffering, of course, back pain, hip hip replacement therapy, all that stuff, shoulder, all kinds of shoulder problems.

You know, it's all, I think, reflected in the contamination of the collagen with the, like, glyphosate. So the book is really centered on that topic and it gets to it sort of after a few chapters of introduction where it talks about all this evidence of glyphosate causing all these problems and all these species.

And then there's these two chapters that actually cover the science behind the idea. And then there's individual chapters on individual diseases, including autism and neurological diseases in general, autoimmune diseases and immune system, reproductive issues and liver liver disorder.

That, of course, is a whole chapter on the gut. So yeah. Well, I can't wait to read this. And I, know your life's work has been educating, all of us to look at this and then these again, pervasive mechanisms, how this is really, you know, one of the most, predominant, underlying causes of the modern illnesses that we see today.

And so, I know that we all are so grateful for your work. And I know this is a lot of research and investigation and putting a lot of these pieces together, you know, to make this, to share the story, because, you know, it's, you know, if you're in one of these camps, you wouldn't see all the, you know, connections.

So we appreciate you, you know, joining these really, you know, important dads and all of your work. And, thank you for opening us up to, you know, yet another, connection.

In the world of life is so good. So thank you so much, doctor Senate for your time today. Thank you. This was fun. Thanks for having me. Thank you.