Podcast Introduction and Guest Background

Trust your bodies, do and don't do. Be proactive, be aware, and be conscious. Do things that are beneficial for you when needed, then enjoy your life and stop.

Because if you are taking a product every single day all the time, you're going to tell your body you aren't well, that you weren't in the right place to thrive and enjoy life.

So become proactive. Amazing. You should, because there are a lot of challenges right now in this modern world. But when you finish, finish with a smile on your face and let your body rest and enjoy your life because you are healthy enough, if you feel healthy you should enjoy that time too.

And by design, we're meant to be healthy, not sick. So just shut down for a minute from all the input on the information and enjoy life because this is a beautiful world.

Regardless of the toxins and everything we are getting on this side, it's a Welcome to the TBD Fit Podcast on Dr. Talks. I'm your host, Daniel Keeley, and I will be guiding you through this wellness journey in terms of optimizing health and longevity, where we unpack the science, the dos, dos and everything in between.

Come join us. Look forward to seeing you inside. Welcome back to The TBFIT Podcast. Your host Dr D and my goal is simple to tease out who is doing the best work in their category and distill all the relevant information, bring it back to you guys so we can all live healthy and wealthy lives.

Today's guest is on a powerful topic often overlooked by conventional medicine in terms of how environmental toxins affect our gut microbiome and ultimately contribute to disease.

Joining me today is someone who's truly on the front lines of this conversation. Dr. Haroldo Magariños, a Chilean dentist and naturopathic doctor specializing in periodontics, oral medicine, and surgical implantology.

He's dedicated years to studying the oral gut access and its role in systemic health. As a co-founder and lead scientist at DetoxU, he's been pioneering methods for advanced toxin detection.

and detoxification strategies. His mission is to empower people with the knowledge and tools to reduce their toxic burden and optimize health. It is an absolute privilege to have you today.

Your presentation at a conference we were just at recently really opened up some interesting questions, which I look forward to to continue today, so welcome to the show.

Thank you so much. Happy to be here. That was an amazing way of pronouncing my name. I don't think I can do better than that, so thank you so much. You made my day just by saying my names with that beautiful pronunciation.

Hard to get that. As I mentioned earlier, I have a tongue for language given my ethnicity. So, father from Italy, mother from Eastern Europe. I spoke their native tongues in English.

I actually learned in school Spanish, similar to Italian. And I studied as well. So I do have a tongue for language in some respects, but I haven't been to your part of the world, which I look forward to at some point.

Hopefully I can come join you whenever you go there next. Oh, I would love to. Yeah, it'll be my pleasure. I will be your tour guide. We will make it happen.

So in terms of your history, always like to open up just to provide our community with how did you get into kind of what you're doing today? It has not been a short journey for sure, but I'll try to summarize it as much as I can.

As you mentioned, as a dentist, a traditionally trained dentist. It was performance surgery and dental treatments for 12 years of my life. I was also part of the staff of several universities, so I teaching on a permanent basis.

And I love that. The education was one of most joyful parts of practice, my professional routine. What happened is that I was practicing at the same time, I'm just asking questions.

I believe most of us were asking simple questions like, why district men doesn't provide a long-term resolution? or why if we think we know the root cause of this disease and we're aiming towards that, we are not fixing the problem for good.

Why people are coming back over and over with these chronic illnesses that they're not resolved even though we were doing our best and with all the guidelines to treat them and supposedly fix them, and heal them on a permanent basis.

I couldn't live with those questions. That's just the reality. And I was very lucky. I always say that I'm very blessed because I asked and I given with the things that was asking for.

People that led me to the field of biological dentistry and natural medicine. Down the road, I started getting deeper into the microbiome, which led to me collaborate with different companies across the country and lecture about microbiome testing, microbiomes protocols.

I had a practice which I was seeing patients for microbiom balancing protocols as well. And there was one thing that was a common denominator in every single person I saw that severely or not even that severe severely, but it was affected by microbiome imbalances and chronic illnesses that were not resolving in the standard form and that factor were toxins.

How Toxins Disrupt Health and the Microbiome

And I start testing for toxins and I realized that toxicity was the major blocking agent for improving health conditions or staying on a good place over time.

And I was testing by side-by-side toxins and microbiome analysis and things were really correlated. So down the road, I had the opportunity to build something around detoxification support and with my intention of healing and improving microbiomes and balances, which is connected to every chronic illness we know so far.

That's how I build the company. I'm co-founder right now, which is called Detox Hue. We produce products and we're working on launching a test to understand this in more depth and provide more tools for helping people in Israel.

But it just started with questioning things. Why is this not working? What is getting in the way? And why things are not giving me the outcomes I'm looking for on a day-to-day basis.

I share your sentiment 110%. There's questions and then there's better questions. And I think if you look in terms of modern drugs, like Alzheimer's an example, perhaps we're asking the wrong questions, um, Perhaps similar with, with cancer.

Um, but not for today's talk. Let's get into toxins because. That too is probably one of the most ubiquitous tests we are now running in terms of how we can look under the hood and assess what someone has been exposed to.

And obviously we live in this kind of chemical soup, especially here in the United States. Unfortunately, a lot of what is acceptable here is banned in some other countries globally.

But you've called toxins the silent disruptors, so help our audience understand why are they so difficult to detect and how they impact our biology? Well, the main problem with toxins is that they create a long-term, low-grade activation of the immune system and also a disruption on the performance of both your microbiome functionality and your cell functionalities.

So this doesn't happen on just 24 hours from one week to another, you need time as a factor to create the damage that can be visible. on the clinical testing or from a clinical standpoint.

And that's the issue in terms of acknowledging toxins to be the main driver of disease nowadays. If you see a graph of the abundance on production of chemicals in this country from the past 20 years and the expression of chronic illnesses, they align perfectly.

I have one, I don't have it here right now, but I've one in one of the slides I use for my presentations where you can clearly see the correlation. And this was just a coincidence.

I always ask, what else? Okay, explain me what other element that has been incorporated in our modern world from the past 20 years can explain the race of these chronic illnesses.

Because food, it is a factor, but food itself doesn't cause disease. I understand there's terrible foods, terribly toxic. So it is the food to blame or the amount of toxins we added to that food that is creating the issue.

And if you start thinking the microbiome is quite resilient, always trying to go back to a balance point, on its own it shouldn't cause major issues unless there's toxicity involved.

And that's when it shifts on a permanent basis to something else and drives the immune system crazy because of that reason. So before you're even born, you are getting exposed to hundreds of chemicals on daily basis.

And not all of these chemicals are able to be eliminated on the simple form throughout your body's detoxification pathways. Some of them, they will get accumulated.

Some people, genetically speaking, are more prone to accumulate these toxins, especially certain forms of biotoxins like mycotoxin. And now you have the time factor into this equation.

10 years down the road, you'll have a chronic illness developed. Could be metabolic, it could be autoimmune, or it can be neurocognitive, whatever you name it.

It's just this ongoing expression of the immune system driven by toxicity factors in the course of time that creates. the damage and the alteration in our physiology that leads to this chronic illness.

So I want to dive deep into the impact of some of these toxins on the microbiome specifically, because that's what really piqued my entry during your presentation and how you were elegantly connecting the dots and what happens when you're unable to detoxify some these chemicals.

But the first part that kind of awoke everyone's mind was what I think you reference a modern morning in the modern world, something of that sort, where when you wake up your first drink coffee, which is often enough rife with mold toxicity, often of which you can't even boil out.

Some of these are just so potent. While organic, it certainly doesn't matter in many circumstances. You're first exposed with your first glass, then you shower and now you're exposing yourself to either fluoridated water or chlorine from the water.

As your pores kind of open up, you are lathering on some other chemicals or fragrances in the form of phthalates. other VOCs that are through release from the pipes.

And then comes breakfast and you're having wheat or some sort of bread with avocado toast, something like that,

which is often sprayed with glyphosate before the harvest, um, and then you have other forever chemicals down the road, using kind of cooking ware and, uh, sometimes the eggs then have some micro toxins present.

already, uh, kind of shot yourself in both your feet. So, um, let's dive into, to some of these toxins and how they impact the, the gut microbiome. Obviously we were, as we mentioned previously, I mean, we're more, Um, gut microbes were more microbial DNA or bacteria in some respects than, than human DNA by a factor of 10 to one.

And that number is likely growing. rapidly as we begin to learn more, but eager to see the interplay of the microbiome, the mycobiome. But let's first start with some of these toxins.

Pick your poison. Which one do you want to discuss first? Heavy metals, maybe? Which ones? Maybe heavy metals? Yeah, heavy metal is a good one actually to start.

So heavy metals are ubiquitous in soil, most of them. So that's one thing that I like to mention because we tend to think that these things are foreign, that they're not supposed to be there.

And the reality is that many of the toxins we're dealing with right now are part of the environment, part the world we are meant to live in. So not necessarily they're supposed to create damage, per se.

But the problem is that heavy metals, they can be metabolized in different ways depending on the status of your biological pathways. That includes the microbiome and also your cells.

So when we get oral incorporation of these heavy metals in a small amount, we're able to cope with that. The problem is that we got too much of each kind on a single day basis.

because they are bioaccumulated now in the soil in 10x, 20x 100x fold. And you can see, for example, ewg.org water report, what we get in tap water, and you see things like arsenic, like off the charts of cadmium off-the-charts.

The problem that happened is that also these heavy metals are highly used in pesticides and herbicides and other waste products of the industrial production of different things.

And now they're getting into the cycle of water, the food production, and now, they are getting bioaccumulated in the soil. Way too much. So it is all about the exposure.

And at the same time, our microbiome will come into the game and say, hey, you know what? I'm going to deal with these guys because I don't want to die.

I didn't wanna get like killed or damaged by the, the exposed shirt to these heavy metals. They will take action, but for them to take actions, they need to switch.

We need you change the composition of profile. in order to have a certain type of pattern that is more able to cope with these damaging elements. And that drives microbiome imbalances on a long-term basis.

And that alteration also changes the pattern between the communication of the microbiome and the immune system. And now your immune systems is getting red flags from the micro biome.

Now your system goes whack and now you have mitochondrial dysfunction. because you enter a realm of overexpression of cytokines that are circulating your body all the time and mast cell activation and all these other things we talk about on a daily basis when it comes to immunological disorders.

So everything is entangled, everything's connected, and the kickstart It's coming from the lack of consciousness in the way we did things for many years, and we still do.

And we're creating a disruption by accumulation of things that we were able to properly manage to a certain limit, but we've passed that limit so far right now.

We crossed the line beyond our physiological capabilities. I like to always emphasize our body is perfectly designed for elimination of toxins, but the optimization of our pathways is not present as much as it was before because of the lack of nutrients and phytochemicals that were present in our diet.

And on the other side, the abundance of toxins went way too far from the normal exposure. So heavy metals are a great example of how something that is naturally occurring on on, on becomes a malignant damaging element because of the hands of humans touching all these things and using them for certain purposes and now dumping them into our nature and we get exposed to them on a daily basis.

Now, on that note too, last note, I want to mention mercury is one of the most problematic ones because mercury has this tendency of switching to a very, very damaging form that it's very able to get accumulated in the brain and that the same I will say applies to lead and arsenic.

And because they love fatty tissues, that's why they have an electromagnetic affinity with those fat tissues. And especially in the brain, they can cross a blood barrier.

Now you're testing yourself for these toxins and you might not see them on the bloodstream, for example, but it's because there are just grafts on those tissues and they're permanently staying and creating a low-grade inflammatory reaction.

And no wonder why we see in animal models with Alzheimer's and Parkinson's down the road, huge levels of arsenic and other heavy metals accumulated in the brains creating this type of damage.

And I think that all these tau and all this other ApoE4, APOE3 proteins we're seeing and in the histological analysis of the brain is just the result of their activation of defense mechanisms trying to detoxify from all the substances.

Yeah, phosphorylated tau, tau tangles. Yes. In Parkinson's, interestingly, going back to asking questions, I don't see Parkinson necessarily as a brain disease.

It's an olfactory issue because things can be entered through the nose through specific chemicals, and then it's also a gut. issue that becomes systemic.

And as you mentioned, elegantly, that mercury crossing the blood brain barrier, mercury displaces magnesium critical for bone synthesis as we continue to age, also hormone synthesis metabolism.

Then to modern, to buffer against our modern stressors, we're completely overworked, under recovered, malnourished, overfed, certainly toxic. The question is to what degree and magnesium is kind of the first mineral to to buffer against that, which is severely displaced in terms of its elevated mercury.

Now, cadmium, looking at cadimium interestingly, since you mentioned that which has ubiquitous in the soil, lung cancer was almost null and void prior to smoking.

But now what we've adopted is vaping, right? And it's very, very common in our patients who are vapin', which we don't realize. So sometimes it just a lack from realization that we think we're doing something better, but in fact, sometimes, it is more harm than good.

Oh, absolutely. I mean, I can give testament of that because while I was testing for different types of toxins at the time I wasn't practicing, the people that were the worst with heavy metals were people who were actually vaping on a daily basis.

So that switch that's supposed to be healthier actually is creating more problems than solutions. I'm not advocating for vapes actually. We're transferring one problem towards another.

It's bigger than than actual smoking.

Heavy Metals and Vaping Exposure

I'm responsible for what I am saying right now. But nicotine, yes, and all the other elements they add in the tobacco, they're not good for you. Nicotine is the only thing that might be beneficial to a certain extent, but all of the elements that they are adding to the tabacco plant are definitely not.

And after processing, compared to amounts that you can get in terms of the the potency you get from these heavy metals that are used on the vaping devices.

I think that the, the vape devices, they have way more load of toxins and heavy metal than what you could get with one cigarette. Not saying that anything is good, I'm not saying transition to cigarettes.

I mean, please cut all these things from the roots because you don't need them and your body doesn't meet any of these toxins whatsoever. Interestingly, nicotine, I think there could be some no tropic effects.

We have nicotinic receptors. And so sometimes we use that even to kick out the spike protein in our long haul COVID patients very effectively. So there can be benefit to what nature produces.

But in terms of how we modify and play this godlike figure, to enhance certain things or isolate certain thing, it virtually comes at a very systemic inflammatory cost.

Let's segue then into another form, pesticides, one of my favorites. So agricultural chemicals such as pesticides or herbicides, fungicides, insecticides you name it, organophosphates, glyphosate.

Let's look at how what we're spraying on our food system to what is touted to be able to feed our growing population or to improve yield, how that is actually crippling our health and our microbiome.

Yeah, well the microbiomes probably is one of the parts of our body that gets the most amount of the negative effects of these chemicals. For various reasons, first, they make the short-chain fatty acid production drop dramatically.

That alters everything, including our neurotransmitter pathways, insulin resistance. So we have GLP1-driven issues. just because of the alteration of microbiota, the GLP-1's agonies are so hot in the market.

Well, one of main things you want to do if you to improve those pathways is just reducing your toxic load because they will alter your microbiome populations to neglect the GLP-1 production within your gut microbiome, including acrimansia and other keystone species, they will suffer from the exposure from these chemicals.

Now, the altered ratios between the fermicids and bacteroides, which are the two biggest philums we have in the microbiome composition, also creating higher risk factors for metabolic disorders like obesity, high blood pressure, etc., diabetes also.

So that's something that is not properly acknowledged. I believe that there's a huge factor in in toxicity world regarding the metabolic optimization we're looking for.

And we were very driven into optimize the cell performance. But if your cell doesn't have the room and the space and a clean space to operate, you're not going to get anything.

out of whatever you're trying to push on the metabolic pathway within the cell pathways. You need to remove the toxicity factor out the equation so you have that space to perform or improve your physiological outcomes to its best.

It won't work otherwise. The other thing that we know is that glyphosate which is the famous one in terms of the chemicals used in farming right now, it was meant to be used as a circulator, as pipe cleaner, initially.

So now you can imagine all the cofactors. are needed to activate your cells, just your electric transport chain. Basically, every single thing that you need for moving the gears inside your your cell is affected by the presence of glyphosate.

Glyphose is water-soluble, so it's pretty transient. It doesn't stay in the body for too long, but it is the ongoing exposure we're getting on the every single day that is affecting our body's pathways.

Now we're getting our zinc, our copper, or magnesium displaces glycine, which is a very essential amino acid. We can't produce glutathione because we are getting those amino acids out in the right way.

So it's affecting the performance to the core, to our, the most fundamental pieces of our needs, physiological needs. And that's one. So let me mention one more thing about this.

We already talk about heavy metals. Now we're talking about pesticides and herbicides, and we have so many around this family. Every single one matters in terms of creating damage.

And now you start thinking, okay, but I'm factoring and adding to the pool of toxicants all of this at the same time on a single person, on the daily basis.

for 10 years, or 15 years or 20 years of my life. No wonder why we're struggling trying to stay healthy in this polluted world. It's almost an impossible feat and I see the accumulation of the toxic burden.

Um, unfortunately, even present in our youth. So when you mentioned glyphosate and displacing glycine, if you look at collagen production, which is, um, you need that amino is key.

We have a lot of our young athletes coming in with stress fractures or with connective tissue issues. or their hormones are half of what they were when I was playing at their age.

It is remarkable. And I see, again, a very, very steep increase in injury and risk potential with again this accumulated toxic version. But nobody, as you go to your pediatrician, it's never been tested.

And if you look at the nutrition and the South American diet, you're just being bombarded on a daily basis. And the problem is while we evolved to deal with parasite and fungus and bacteria and virus, even heavy metals to an extent, we never evolved with all those plus this inundating toxic burden that we are now exposed to glyphosate, particularly looking, I think it's estimated that 126% rise in Parkinson's as an example.

And I that's outpacing, set to outpace even Alzheimer's risk. Uh, and if you look at People, especially golfers who are, who live near a, uh, a golf course heavily, heavily sprayed with glyphosate.

I see golf is with so many unique issues related to glyphasate exposure. Cause we can test for that now. Is there a specific test you're doing to evaluate that?

Yeah, well, actually, it is a tricky one. Like I said, this is one of the molecules that you can speak with my scientific team here in the lab and they will tell you it's a trick one to detect it properly.

I think that there's room for optimizing actually the detection on the love. from a lab perspective and in human samples. So we're working very hard right now to get it right with the level of accuracy, because it's a switching molecule.

It has a very weird behavioral pattern from an electromagnetic standpoint. it just switches from positive to negative. This is weird. But again, we are getting it, right.

And definitely I'm very excited about what we will be offering in the future in terms of accuracy and the extension of the amount of toxins we will be detecting with our panel.

And that's the goal, that we can offer something that becomes the gold standard for toxicological analysis. This is all for one big reason, to understand what you're getting exposed to and establish a baseline that you can become proactive on.

Because everyone is hearing all these stories about PFAS and glyphosate and heavy metals, but you never know if that is applying to you or not. until you see it with your own eyes.

And then that's when you have that humble moment and probably will switch your paradigms and make you conscious about what's going on. That's what I'm hoping for, that this will change the paradigm and will make people aware that is not something that happens in a distant country.

This is happening today in your house within your environment in everyone you know and yourself to a certain degree. It's not something you can avoid or skip.

The only question is how much and which type of toxins I'm getting so I can start becoming proactive and dealing with this in a more efficient way to improve my chances that I am not going to get sick because of these things down the road.

So yeah, that is my critical, there's the critical piece of information we need nowadays. Because as you said, you go to the pediatrician, and you to a regular doctor, they will never acknowledge this is an issue.

Pesticides, Herbicides, and Glyphosate

They will not tell you, oh, let's look at the toxicological panel and see if there is something there that might be getting in the way from your immune system to behave properly, or maybe your insulin resistance might affected by this.

That's not even in their minds for a second. Uh, we need to do the homework. So we reversed that and we make it standard. Um, hopefully that's going to be the case.

That's what I'm aiming for. You know, what's interesting as a side note, I took my daughter to the pediatrician, uh, not long back anyways. He said that he, he thought she was having some issues with her mucosal membrane, sinus and allergy.

She was just kind of sick with a cold. But he said, um, she has allergies. And I go, okay, that's interesting. From what or why does she have allergies?

Oh, well, you know, Daniel, it's just bad luck. That's great to know that health is based on luck, great. We have the same chances of going to the roulette in the casino.

I'm not going to mention names, but he's the head physician at the department of a major practice. What's interesting though, in terms of allergies as a complete aside, we've begun to normalize what I term as the abnormal.

Allergies are abnormal, asthma is abnormal skin issues are normal. Brain fog, fatigue, lethargy, sleep disruptions, hormonal imbalances, you name it. We begin to normalize a lot of these symptoms because when you go to see a physician often enough, it's just, here's the drug for the symptom.

And I don't want to undermine, some of the physicians are bright individuals. It's what tools you have in your toolkit. So when people tell me they have seasonal allergies, they're already is something screaming out.

We have barrier disruption, we have poor barrier integrity, We need to fix that. So when you set exposure to some of these chemicals and like cadmium as an example, to decrease short chain fatty acid production, that's key to maintain gut barrier, integrity.

That's the key for immune regulation, right? And so we see a lot of this heavy metals that are doing that, I know you mentioned like chelating minerals and electrolytes, oxalobacter, One we can get into because that's something we're testing for.

And if you are not doing a stool test to me, that is the number one longevity test you're missing out on. It is such interesting data and while, I mean, the jury is out perhaps how quickly things can change in your microbiome.

for me is that we understand the bi-directional nature of our microbes and every sort of biological system in the body. But we have so many people saying oxalates are terrible for you.

And beside the impact of oxalyte, if you're missing the microbes that break down the oxylytes, which I think food that contain oxylates can be in many regards beneficial, you are not able to bind some of these heavy metals.

chelate out some of these heavy metals. So I think that there's a book called Missing Microbes. And what's happening is as we see a lot of this microbes missing, we have people that are touting like you need to avoid this, this and that.

Well, actually, no, you don't. Just like your focus, my focus for the last decade has been on microbial medicine, because that to me is we're just beginning to scratch the surface.

the bacteria biome, if you will. I think there is so much to learn how the impact with postbiotics, as example, another emerging field or a lot of these other kind of genomics in there play every microbiome.

But let's go on to another group of wonderful, I used to call it the The lucky seven, and now I call it the unlucky seven. So I know like Peter T references his four horsemen, mine are bacteria, fungus, virus, parasite.

And then the additional of excessive, obviously heavy metals and environmental toxins. Then you couple that with modern stress. But in terms of the next category of toxins, industrial chemicals.

PCBs, dioxins, that's certainly one which came on my radar some time ago. It's remarkable that impact. PHAs from combustion and solvents. So obviously there's persistent pollutants in the environment and how that is impacting our microbiome.

If you want to dissect any of those. Yeah, sure. Well, when it comes to the microbiome, again, affected by all these industrial pollutants. First and foremost, we're just learning because we have already 3,000 chemicals being produced in the United States.

And that is a vast number. Of course, you will imagine there's no specific research for each one of them. So we're guessing, in an individual form, what they can do that can be damaging our physiology and our microbiome.

We have some data from a few of We're really missing the whole picture. And then imagine now these all bioaccumulated at the same time, we're interacting with our body and our cells and are microbes.

At the time time the combinations are huge. It's impossible probably to calculate the type of damage we are getting. But I will say that there's some common pathways we need to acknowledge.

And the first one will be that, there is a direct impact on the gut microbiome, as you mentioned. There's a change on microbial diversity, both richness and evenness, so the balance.

is set off and then your microbiome doesn't function in the way that it's supposed to. And the other problem is that, it triggers imbalances on the microbiom composition that leads to a more pro-inflammatory microbiota.

I interchange those names and I will do it all my life, probably, but we understand microbiomes, genetics, microbiotas, the actual microbes, and they keep doing this, using them.

as they were one thing and they're not. So that's one. Then you have this ripple effect where all this pollutant, VOCs and bisphenols and phthalates and all these other chemicals coming into the game affecting your microbiome, your microbiota, what they do is they alter again the composition.

Now you will see three major issues. that are going to occur as a result of these type of imbalances driven by toxins. First, you will have a pro-inflammatory pattern where you're going most likely get more lipopolysaccharides released in any given time of your day.

because of that pattern change, that will trigger immunological reactions in a greater way, which will lead to chronic immune activation. And then you set the ground for anything that can be diagnosed in the chronic illness realm.

So it really depends now where is your weak point and you will develop a certain type of disease. The root cause remains the same. The second part will be the expression of neurotransmitters, which is very aligned with this previous statement.

That's why we see a raise on ADHD, autism, and every spectrum disorder, neurological, neurocognitive diseases, even Parkinson's, as you were mentioning, Alzheimer's.

They have a profound connection with the alteration of the microbiome because of alterations of neurotransmitter production and also creating byproducts that are actually the opposite.

They are very negative for our physiology from a central nervous system perspective. And third is the, the iteration of their functionality of this support organs.

When you create that pro-inflammatory state and you affect also the mitochondrial performance because all these guys are getting in the way of the energy production of our cells.

Now your cells in deliver in this stomach, which are highly demanding for energy, production, they can't. They can't get to the optimal functionality that they need to perform and keep things running in the way they're supposed to.

So now we're not breaking foods properly, we are not maintaining a normal balance in microbiome because we aren't filtering microorganisms because they don't have enough stomach acid to do that from the salivary entry standpoint.

We are producing enough bile. And now we are even driving more toxicity, more issues with nutrient absorption. To add a bigger issue to the already big issue of lack of nutrients in our diet, from the little amounts that we find in the South diet now also we add the other factor that were not as able to squeeze even those minimum amounts of nutrition because we don't have the capabilities from their digestive organs perspective.

And our immune system, which is also supported by the liver function, the biliary tray function et cetera, the Kidley function is not operating properly because the input is missed.

in a greater extent. So I'm just connecting. I did a really quick summary of all the interconnections. And if you get crazy on this, I can start going back and forth with the brain and the gut and adrenals and cortisol and interleukin-6 elevations because of the sympathetic state activation.

Then you go to more permeability, more toxins getting into the circulation, going And you can imagine, you're going to find a picture how entangled, how interconnected everything is.

But the key point, the starting point always comes to the fact that there's a profound imbalance in our biology because we're affecting the terrain conditions by pollutants and toxicants that are not naturally supposed to be there.

but we added those artificially because of progress and modern needs. Let me underscore something that you had mentioned as well, because I think we see an explosion, if you will, of ADD, ADHD, Asperger's, autism, and heavy

metals aside, this chemical class of organophosphates, insecticides, pesticides, obviously some of these other chemicals, It inhibits acetylcholinesterase.

And what does that do? That breaks down acetalcholine in the nerves. What does it lead to? Well, you have hyper stimulation when you're not properly breaking that down because of these exposures.

So you are connecting the dots. I think that more people need to connect more dots And then obviously how that degrades some of our microbes and just completely wipes them out.

We see that when we do stool testing with our patients. But needless to say, beyond that, what's interesting as well is when I mentioned dioxins, for example, Dioxins is, per my understanding, coming off the burning of waste products.

And what happens is because we live in a global society, these waste product can travel a great distance and they're water soluble, but they don't degrade easily.

So they remain in sediment, they accumulate in soil. Uh, and they're linked with some severe issues. I mean, mildly, you can say maybe liver toxicity, um, skin issues, but it's implicated in fetal development, uh, learning ability with children, cancer as an example.

So we don't necessarily even understand the severity of, of what we're doing here. And then you said 3000 chemicals while that might be. 80,000, 83, 000 reported so far and keep counting.

83 thousand. I saw an interesting statistic the other day that it's estimated that there is 2 billion pounds of chemicals in circulation at any given point here.

2 billion pounds. So I know you're, you are alluding to kind of different chemicals and no one is testing. It's, it's impossible to test the chemical soup and plus, because it is yearly.

And so, and it allowed, unfortunately here in the United States, It is almost like we do it and then ask for forgiveness. Right. That's the philosophy here, I think in, in United states versus in Iran.

Yeah. Yeah, in Europe, when we saw mice exposed to long-term use of glyphosate that developed cancer, right? The studies here were done up to I think, what, 12 weeks, but there they saw tumor growth in months four, five, six, seven, eight, nine, twelve, so we understand it's the accumulation, the burden where we have kind of this, I don't want to say impaired ability to detox because the body does it very, very well and the problem is just the overload.

evolved with these kind of man-made synthetic, very dangerous, and very aggressive substances that certainly impact our microbiome and microbiota. very, very detrimentally, and we now recognize how that's impacting our overall health.

And I do also want to provide hope for patients. So this isn't just a one-way street. I know you elegantly presented that also in your presentation. Before we get to solutions, let's maybe look at the last category, which is plastic, right?

Which is kind of on the tip of everyone's tongue and the presence of plastic accumulation, parabens, phthalates, BPA. Let's talk about how that also impacts the microbiome.

Yeah, absolutely. So when we look at plastics, there's two angles we can use. One is the actual plastics like what we call microplastics that are found everywhere, including in the fetus, right now in a placenta.

We have them in brain and we have everywhere. Actually, they're pretty small particles for most of them. They vary in size but they have these biological properties of interacting with our receptors and that became really, really concerning when it comes to endocrine disruption because they do block or alter the expression of hormones, especially estrogen hormones based on the affinity they have for those same receptors in the body.

And actually, that I think applies to many others, not only estrogen receptors, but also we have the additives. for those plastics to have the mechanical, the physical properties we're looking for, like all these bottles that you can squeeze and smash or bend, that is, those physical property are given by something called bisphenols.

Industrial Chemicals and Persistent Pollutants

And then we have BPA, BPF, BPE, BBF. So we will have plenty of them. Now BBA being the most recognized because it was the one that was used the mostly initially, now we are transitioning to different types of bisfenols, not A, but type E or type F.

Now, are they better? We don't know. There's no enough data to say, oh, yes, we're replacing something bad with something not so bad or actually harmless.

Actually, the little data we have right now is that they're even worse sometimes than the actual BPA. So we are really exchanging one daemon for another.

We're not really helping the cause of creating a better place for us to remove them out of our bodies. Now they're attritioned, they go quick in and out, but they only need a very minimum amount to create the damage that they create in the body.

So they affect the microbiome, the biology in our cells, receptors, et cetera. They're linked to some forms of cancer. and immunological disorders. So there's sufficient data to show that they're pretty damaging for our biology, and they don't need much in order to create that damage.

And when you test for those, this is the interesting part, you will see that. But what it comes to my mind every time I see them is, okay, if this something that doesn't stay in the body for longer than 12 hours, worst scenario.

And this person is telling me that he's drinking from glass bottles and is not using plastic items on a regular basis, and speaking high on BPA, well, that means that it's unavoidable.

That is the worst part of all this. that you can only avoid as much from being proactive, but 80% of the toxins we get today are ubiquitous and unavoidable on our daily routines.

I'm not saying that we shouldn't be proactive on the things that, we can do something about it. But nowadays we have this major issue and it's not going to get better only with avoidance itself.

It's just not preventable to the full extent. That's my concern. But definitely plastics are concerning right now because now even the healthy foods we want to eat like good fish loaded with omega-3s and other beautiful nutrients, we're getting a little bit scared because it's loaded now with microplastics.

all around. I do believe that this is where we draw the line and probably it's going to be our next topic in our conversation between avoidance and proactivity.

what we can do to avoid them or what can we do within our biology to optimize what are we getting exposed to that we cannot avoid. Plastic, in my humble opinion, is absolutely, unfortunately unavoidable.

I always say I'm plastic-free since 2003, but the reality is that if you even get takeout as an example, Right, there's, it's in plastic, like is delivered in a plastic is leaching, you get a Starbucks, the top of the cut plastic.

You're leeching plastic every single wear. I mean, is used to produce everything and it is inexpensive and in some degree it has benefited us, I think, but in largely not at the consequence of our health.

And so I say often, we're not what we eat anymore. We are what eat, drink, breathe, touch, and can't mitigate or eliminate. And that's the reality. So to me, I think avoidance is nearly impossible.

It was interesting. I was on a plane across the seas and I watching this documentary where this group of Italian scientists, they were trying to devise a device that looked like a stingray or a manta ray that would float at the top of the ocean to correct the black plastics, completely undetectable to the naked eye.

And when they would lay this device down, they kind of examine it under a microscope, and it was just copious amounts of plastic at the level that is unddetectible by eyesight.

Right? So regardless, we're swimming in it. It's the reality. Yeah. And you get them from the airway pathways, from skin contact, through the ingestion.

So it's multifactorial in terms of how you're going to get it, how do you them on a daily basis, and they affect things like are critical, like your a real hydrocarbon chain, for example, receptors affecting your digestive capabilities, your immune system, and your liver.

It's just a mess in terms of the organs that are getting affected. The microbiome, you will have a major switch on your FV ratio. you will have more resistant microbes, more inflammatory microbes created because of the exposure.

they reduce the short-chain fatty acid production. Again, like you were mentioning before for other things, they do the same, but this is another element.

So again, if you start factoring the presence in our daily life of all these toxins all at once, just too much, and actually I'm surprised that with this huge amount of toxins, We're not falling apart in an instant.

We are not really dropping in the floor and crashing, literally, because of how much we're dealing with on a daily basis. That tells us that our biology is superb, is amazingly resilient.

I think we got to the point that we need to be mindful about how to support our biology for getting away from the risk factors created by these toxins.

You mentioned, obviously, it's in the air we breathe and looking at My philosophy is we don't live anymore congruent with our modern, but with it, with their evolution or our biology, we go from one box in the next, whether it's our car, their houses, and there's plastic all around us.

We breathe about 10,000 liters of oxygen daily. And that's probably the most overlooked component. I think in modern medicine is a lot of what's happening is, is what we inhale.

That's what some of these industrial chemicals as I expressed earlier on with Parkinson's is just the door is at the nose, the olfactory bullet. And so, yes, that's impacting our microbiome.

Yes, there's things that we can do about it. But you took the words brilliantly out of my mouth as we are resilient. We can survive and thrive. In fact, we just have to be very conscious with certain decisions.

Let's take a look at clothes, for example, because that was something you brought to my attention during your presentation. And I have only sourced organic clothing, interestingly, as Uh, I don't like the term woo-woo maybe, but as myopic as I am, uh, even organic, it's interesting that we have to have a discourse around organic.

That infers that obviously there's, a poison and a, poison to a less degree. Because it still poisons, you're allowed to spray chemicals on organic cotton.

either way so but let's look at PFAs or forever chemicals perfluoride chemicals how that's common in our cookware but then also I understand what you were saying in clothes that are wrinkle-free as an example most people we think that we're doing a convenience by buying these synthetic fibers that our wrinkled free so we don't have to iron or You know, we pride ourselves on our convenience, but again, at the expense of our biology.

So when you mentioned skin as well, our most kind of largest organ, most porous organ if you're not considering muscle naturally, how that's impacting, I guess, on a micro level with constant exposure on daily basis.

So PFAS was the, unfortunately, they were brought to the market by DuPont, if you know the story, and then 3M acquired them to be used in non-stick cookware and also some other items, including airspace industry.

They were very promising because of the physical properties they possessed and how we were able to simplify our modern needs. Again, modern commodity or comfort zone usually drives this type of things to a larger extent in our lives and then it's hard to get away from them.

So, beef houses are a great example of how modern world drives necessities to alter materials in a way that we find out 10 years later than they were thoroughly damaging for our biology.

We use them in everything, shampoos, like paints, pesticides, packaging, clothing, you name it. It's really, and of course, cookware, which blows my mind.

so common to be found even in any store. You go to any retail store that sells cookware and you will find Teflon there across the whole aisle. And it's like, did we not establish already this thing is terrible for you?

Like it is incredibly harmful and yet we still use this? Is it allowed? It boggles me how long it takes to create decisions when we already have enough data.

Because I will understand, oh, nobody knew. Okay, well, I'm so sorry. We were selling this, but we were completely clueless. But how come we have tons of research done on how damaging these elements are and we still don't move a finger?

We're worried about red And honestly, those are avoidable. You can read the ingredients and not buy those things if you don't want to. But PFASs, unfortunately, are accumulating in the environment.

So even if don' t want exposed to them, you're going to because they're already there and they don t leave. That's why they are called forever chemicals.

One of the biggest parts that gets affected is the cut lining integrity. So they affect something called the efflux pump. And so everything that is supposed to be pushed back to the intestinal lumen is not going to, because they down-regulate the expression of the E-flux, the toll-CA flux pump, and now you have permeability.

You know permeabilty triggers immune system imbalances all across the board. They also create imbalances on the microbiome side directly. But the worst part is also, I will say, the leaky gut side.

And we know that that leads to so many metabolic issues. We know the exposure has good data. behind that shows that you get insulin resistance and obesity driven by the presence of these PFASs of multiple kinds in our biology, microbiome directly gets affected.

So it is really, again, another element we add into the pool of toxicants we're exposed to on a daily basis that is affecting our Unfortunately, these specific types of guys, you have two types actually, the big molecules and the smaller molecules, both equally damaging.

The small molecules are a little bit more damaging than the bigger ones, but the problem is that we don't know how they leave the body, naturally. We can definitely improve the scavenging process and the binding process, and try to get them out.

But naturally speaking, for a person that is born today in this world, will have B. facis in his body or her body, And they're just not going to leave on their own.

They're going stay. And every single day matters. So by the age of one, they already have 365 days of exposure to

B faci. That's my modeling. And we don't think about it.

Unfortunately, I'm thinking about. That's what makes me happy. But this is where, again, if we talk about the regulations for avoiding the exposure in the general population of all these toxins, then I am not happy either.

We definitely need to bring more awareness. And that's why testing, for example, making an affordable, easy test, for this talk sense makes total sense because I believe that if we bring enough information, we empower society to drive the changes and improve the environment we're living at and forcing regulations that allow this world to be cleaner and healthier.

It's disgusting is what it is in terms of what is allowable. And the point is not to get into politics. Obviously there needs to regulation and policy around this.

So instead of restriction in helping people with certain unfortunately like insurance not covering certain testing and everything that we can actually get to What's now deemed as root cause medicine, we need more, I think, regulation around this to understand that there is certainly hope and we can test for a lot of these things, but it's important to discern what's going on, right?

What about xenobiotics? Well, all of this, xenobiotics in general, it will include anything that's coming from the outside. Yeah. So again, they all have these common pathways in terms of affecting our environment.

At the end of the day, whatever comes from outside, beyond the norm and beyond that ranges, the standard ranges affects our capabilities for putting together protocols aligned with preventive medicine.

But that's why also is important what I said before, the establishing baselines that are healthier in our environments. provides a suitable place to also implement preventive medicine in our world, which is the most effective type of medicine, the medicine we do before things happen.

So every single thing that we take out of the environment, any synomyotic that could be present that is not there anymore or is reduced, matters to make things change.

That is what I'm all about. But again, symbiotics in general, across the board, are directly impacting the way we function, the ways we're able to perform.

And again if we talk about longevity, for example, and that's a huge topic right now, so trending, Well, longevity should start with supporting detoxification.

Because if what we're aiming to is optimizing our cellular performance, well, the best way to start is improving the environment, settings of those cells, so they can do what they do better.

All these chemicals, they upregulate or downregulates CYP enzymes. Now, most of the times, our body will cope when it gets exposed to the synobiotics by adjusting the CYP expression to a higher degree.

But that creates more reactive oxygen species. If our physiological pathways on phase two and phase three are not optimized, Then you get a huge buildup of reactive oxygen species that are not clear.

And now you disrupt the system even. It is so important that when you look at detoxification to be synergistic and comprehensive. Because if not, you are just accumulating one aspect of the phase of detoxification that is not going to be properly processed on the next step.

And that creates more damage than good at the end of day for the outcomes of whole process in full. Our receptors are willing and able to receive all these inputs.

It's just a matter of us being conscious about it and putting them on a table and making them work to the best of their performance. And we can definitely do that.

I'm convinced. It's a great segue for detox, but I want to ask just a couple more questions before we get there, which I know this has been very, very thorough.

So I appreciate everything how I love getting into the science and the weeds. in terms of mycotoxins. And before you go there, what I want to reference, because you made a mention earlier, FB ratio.

Plastics, PFAS, and Everyday Exposure

So for our population to understand it, for making it easy to bacteria's ratio, which comprises most of your your phyla, we see now that there are signatures for every modern disease, for Parkinson's, Alzheimer's specific cancer, autoimmune.

Each disease has its own microbiome signature. And we can predict with a high degree now of efficacy of what happens later down the line. Autoimmune to me is a diagnosis of seven years.

And so things happen way early on. And when you say prevent, that is the business of preventative medicine. That's what we're really focused on here within our practice, is how do you stay ahead of the curve?

Can you do a total toxin testing to see your burden, to make sure that you're staying on top of things? But even in your modern lifestyle, there's ways that, you can do that.

Mine is, I always preach the foundation five. You got to eat right, sleep right. Move right talk right poop right and you're going to feel right. And the reason why I asked about the xenobiotics is because while it encompasses kind of everything that we've discussed, my mentor always said, this was decades ago, assume everyone is xenotoxic until proven otherwise.

I see that with our total toxic burden. But let's go, what are your thoughts on mycotoxins? Mycotuxins is another category that, again, it's naturally occurring.

So this is not something foreign for us. And it became a problem for two reasons. One of them is a genetic disorder that affects more or less 25% of the population in the U. S.

that doesn't allow the immune system to eliminate them properly. So instead, we activate something called the complement pathway. not going to go into detail on that.

Basically, the immune system scavenging process doesn't operate properly and instead we activate an alternative pathway that doesnt allow the elimination of these toxins out of the system.

It kind of neglects the activity of primary function of the immune system and it goes to this vicious circle mode where things are not cleared and then they get reabsorbed and recirculated.

So the problem with the mycotoxins is not that they are damaging per se in the right amounts in natural type of exposure we're meant to deal with on a daily basis.

It's the genetic input we have in certain populations that are unable to eliminate them properly out of their bodies, plus, or alone, some people will be separately, but it could also factor as a combined problem.

The modern construction patterns and the way that we build things and we ventilate things inside our house that creates a bioaccumulation of these toxins internally without pushing them out in the same way.

Because all the HVAC systems are bringing air from the outside into the inside house, but that air doesn't leave the house at the same speed, in the similar manner.

So that the air comes with those mycotoxins from environment, which are diluted and they're not damaging at that level outside the House, But inside the houses, they get bioaccumulated and we increase the exposure by 10x,

50x.

And that creates damage because of that increased potency on this type of toxins. Now, also construction materials are usually based on cellulose. And cellullose is the primary food for mold.

When they see these dark, humid areas inside your walls or other places in the house, they have a party. they have like the perfect setting to just thrive and grow more.

They have all the abundance of foods there and they start off-gassing these toxins inside the house because the insulation materials are actually on the outside.

So inside they get all of the possibilities to off gas these toxins and now again they buy accumulated. This is, of course, a bigger problem in humid places, usually in the East Coast more than the central part of the United States, West Coast as well, maybe a little bit less in certain areas.

But still, it is a transversal issue in many places. They are not typically tested. They're typically tracened and they are usually eliminated as they as a parent compound.

So if you get ocrotoxin A, for example, you eliminate ocotoxins A. Their water is soluble. It will be eliminated typically by the urine. But that is only if your getting the right amounts and you have the proper elimination pathways in place.

Otherwise, they will create immunological and microcirculatory issues. The biotoxin testing panel that was proposed by Dr. Shoemaker, which I'm sure you know, is big in analyzing inflammatory markers at the micro-circuitary level because that's how they That's where they create the most amount of damage.

That is why we check for MMP9 and PEGF1. and other blood markers, because we know that if you are getting affected by these type of toxins, that's where you need to look for to see if there's some type damage.

They also affect the endocrine system, which gets usually pretty off. And then all your melatonin control system gets off, and then you have hormonal, immune, and all the other issues related to melatonin production.

Yeah, which further suppresses the immune system. You're not sleeping, your HPA balance is completely off and your nervous system is dysregulated and then you're now recovering and you are in this vicious loop where unfortunately you know better.

Sorry, when I say that, and unfortunately, these conditions, this clinical conditions that are driven by mycotoxicity are both very common. I mentioned 25% of the population is sensitive to these toxins.

They're pretty clear from a diagnostic standpoint in terms of symptoms that were created. but they're not properly diagnosed because nobody's looking for mycotoxins, typically speaking.

So you can have people that they look like crazy with all the symptoms that are randomly occurring because of the toxicity created by myotoxin, but there not probably diagnosed and they are not treated or wrongly treated, or suppressed, and that amplifies even more the damage.

Yeah, I have one that's something, so I, have that significant genetic susceptibility. And so that something obviously very relevant and going through a mold remediation in my home.

But in terms of food, obviously the exposure is growing. It's usually attributable to the storage of grains, of nuts. Um, and it's no surprise now we're developing these sensitivities because these, These microtoxins are extremely immune suppressant in some category.

They really drive and up-regulate certain cytokines as you allude to in inflammatory markers. Very, very, damaging. The goal again is test and treat. I think that's…

That's how we do it. The last category here, uh, is going to be surfactants. So common household like dish soap, dish liquids, detergents, personal care products like toothpaste or shampoo.

Um, and then lastly, the emulsifiers. In baked goods or polysorbate 80, a super common one. What are kind of your thoughts on how this last one here is impacting?

You know, I came to understand surfactants a little bit more just recently out of the conversation with another scientist looking at microbiome imbalances.

And the issue is that there's a lot of research coming, especially from Australia right now, that is showing that they could be Don't quote me now because we need to prove this a little bit more, but they could be the single most damaging element for the microbiome, even more than glyphosate.

Because they're persistent, so you rinse something that was already previously washed or cleaned with a surfactant, and it will remain in amounts that are sufficient to create damage.

They literally wipe out the structure components of the microbes, they damage all the lipid structures around the cells, cell membranes. They're used in plenty of household items like dishwashers and laundry detergent and so on and Soaps and shampoos and cosmetic products, we have them everywhere, but also foods.

Just one example, dairy industry. When you make cheese, even organic, grass-fed cheese you have these huge tufts that you put the milk on to create the coagulation process so you can make the cheese.

Well, the residual part of the meal needs to be washed. And the fats of the milk are pretty stubborn and nasty to be washed out. So they use surfactants for cleaning all these items that are used in dairy products production.

They go, then you put another batch of milk. Surfactant still is there. It goes to your cheese, to milk, your butter, anything. And that is just one example.

I can name plenty of food industry processes that they use surfactants in their production just to clean. And they're not listed because they are not directly incorporated in your foods.

They're just used as a cleaning agent. but they're coming inside your foods because they are persistent and they remain in those surfaces in small amounts but sufficient to create damage.

That's the problem with this. Even that's why I said at the conference we met that the main issue is that organic is not a certification of risk-free in terms of toxins.

That's unfortunately not the case. It's only a certification of non-intentional usage of certain chemicals. But they don't test how the soil was before or what you're getting from the underground water.

You're not testing for what is used around the production of the certain foods, et cetera, or the packaging even. They have organic products, organic foods made organically, but packaged in plastic containing PFAS containing containers and packages.

So yeah, how organic that is if you put it in a plastic or a PFAs containing container or packaging. Yeah, it's again to the point, is just unavoidable.

And just that makes sense, right? I see when you're cleaning a lot of surfaces, when your making certain cheeses and within dairy production or anything, and you repeatedly cleaning surfaces.

theoretically doing good, but yet then it's coming up in our food and it just washing out our microbiome as well, which is critical to detoxification.

So let's segue into detox you or what's the solution here. What have you formulated? What's your solution? what is

the general testing that you like? probiotics or spore-based or otherwise.

What's kind of the, give us hope. Well, I was looking for hope and that's why I built what we built. And testing is not out there yet, hopefully soon.

I'm looking forward to the first part of 2026. It's a long process to do things right. and longer if you want to improve, and we want you to offer the best of the past.

And with that in mind, of course, the research behind the scenes has been extensive. I'm speaking with the scientific team pretty frequently and there's a lot of challenges, but it's promising in terms of what we can get done at the end of a day to optimize the visualization of, what's going on in the world right now internally and then how it is affecting our body.

from all these different pollutants. Now, in the meantime, I spent more than a year formulating products. What I did basically is that I was using different companies, different products, and different systems and grabbing what I liked the best from each company and putting protocols together.

As a clinician, but also as a patient, everything I do to his best. Because compliance is one of the biggest factors for success when it comes to any product.

Now, if you put 10 bottles of things on the table and you ask a person to take 10 products three, four times a day and time them differently, depending on their product, really it's not realistic for most of people's lives.

And again, affects compliance tremendously. And also, it becomes very expensive. So all these things, they matter for me to put together what we did with DetoxU.

What I did is I went back to the research. I've did an extensive research about what was working on each receptors that are participant in all the processing of toxins across the board I look forward with the ones that they had the most amount of evidence.

I create a redundancy system also to support the process in multiple ways at the same time. Adjust potency to be optimized for our physiological needs without overwhelming receptors, which is a major issue.

When it comes to supplements and products that I see in the market, they think more is better. That's an absolute fallacy. You need the optimal dosage for physiological performance.

And beyond that point, you're actually reversing the optimization process. I put this together in a way that you need only two products to make it work.

And so compliance becomes optimized and also the simplicity and the price point.

Mycotoxins, Mold, and Indoor Exposure

because you're not paying for each bottle, each batch of production of a single product. You're putting a lot of different ingredients in just one single blend.

And so you you, you are cutting the cost to the consumer. It's more expensive for us to produce, unfortunately, but it's better for the consumers perspective.

because it's less productless, less handling, shipping, everything. So all these things matter when it came to put together this formula. What we created was a two-product system that can be optimized or enhanced by three focused products that I will mention in a minute, that they work synergistically to improve demobilization of toxins when they arrive into your detoxification organs, liver and kidneys, and they allow those toxins to be moved and processed and adjusted so they can be eliminated without interferences.

And on the side we decided, okay, we need to protect the cells. While we were doing this process, so we created something that is called the cellular detox matrix, which is a proprietary blend of antioxidants that are very effective in promoting mitochondrial health and protecting the sales from getting damaged while we're pushing this across the board.

And then we added the binder, of course, to capture these toxins. And we made a binder that is probably the most comprehensive binder in the market. I'm not biased to say that, but the idea here is to not only support the binding process, and the nutrients that are needed for that process to occur without damaging the gut lining, without depleting the reservoirs of certain minerals, and sealing the tight junction that you were mentioning so we avoid permeability issues while we're doing this.

And so, we create a high effective binding process that doesn't allow these toxins to come back to the circulation, getting reabsorbed, and creating this chronic immune activations that we spoke before in this conversation.

That is the main philosophy behind our products, that were simplifying people's lives, we're still Providing a very comprehensive and very efficient protocol that can be people can Be compliant and the protocol works around people's schedules and life And not the opposite.

I don't want people to change their lives and schedules to work around the particle I Don't think that's that is actually It allows the compliance and the effectivity of the protocol itself actually goes against.

Now we have focus products. The focus product are mainly intended to support and appear a specific group of toxin detoxification. So our body, again, detoxifies naturally.

But we know things are a little bit more damaging on this side or that side, depending on the nature of the toxins. So we put together three formulas that they support the main detoxification process.

If you know already the group of toxins you're getting affected by. As an example, simple example. Let's say you didn't get tested with any testing for toxins, but you are traveling a lot.

You know you're getting a lot of airborne pollutants, you know, getting all these VOCs, breathing them out, in and out all the time. Well, there's a focused product called industrial, which is mainly supporting your airway pathways, besides, of course, supporting antioxidant support, et cetera.

But one of the main signature elements of that product is that it helps elimination of toxins from the respiratory tract. And so if you know that, you can use that as an additional to the main, the core product.

At the end of the day, all toxins, they go through this common pathway. So there's no differentiation in terms of how we handle different toxins because they all arrive into the liver.

They all arrived into kidneys. There all are processed through the same phases of detoxification, and they got through to same organs for elimination.

The important part is how do we support those organs to optimize their performance and how we protect the structures that we know are getting mostly damaged from certain toxins if we already know the type of toxins we're getting exposed to.

And that is what we were able to achieve with Detoxin. In terms of the binder, your unbiased best binder. So what is the formulation? So, we added the most common mineral binders.

You know, all these bindings, these molecules have their charges negatively or positively. So they have positive charges or negative charges. They have affinity with different types of toxins.

Some toxins are more electronegatively charged, some toxins are electropositively charged. So when you were talking about, for example, COVID, viruses, they have a certain type of charge, but the proteins of the viruses they

had a different type charge and so on and forth.

Microtoxins, of affinity, and so we blend everything that is known to be effective to bind different types of toxins across the board with a high level of efficiency.

So activated charcoal, bentonite clay, chitosan, zeolite, silica, there were musts because those are very known, very effective, and will like long-term use mineral binders for reducing toxicity burdens.

There was another challenge that is pretty common. A lot of people, probably you saw, you have seen a lot them, they're very sensitive to sulfur. So when it comes to glutathione production or sulforaphane or even food containing sulfur, they are pretty sensitive.

Most of the times it's because they're missing the coal factor. And that coal factory is molybdenum. So with that in mind, and because we know that the vast majority of population is low in mollybdium, For various reasons, actually, out of the nutrient load in our foods, unfortunately, it's very rare to be found.

We added molybdenum in physiological codices, dosages for supporting those pathways and that activation of those pathway on the sulfur-sustained biochemical pathways.

And then the other element we added is shilajit. Now shillajits, it's a scavenging element on its own. It helps with arsenic, cadmium, lead reduction, there's lot of good research about that, but also helps tightening the tyke junctions, seals the cut junctions.

So though these fulvic and humic acids, they act within the microbial space as a very important input to seal those tight junctions and prevent reabsorption and anything else coming from the leaky gut perspective.

Plus the fact that you have naturally occurring minerals there that can be used for other purposes and as cofactors as well. So you have a very, very nice and very comprehensive blend of different minerals and ingredients that will support the binding process very efficiently.

So you don't lose anything, regardless of the type of toxin you're dealing with in a major amount. Very comprehensive, very thorough. I certainly appreciate that.

In terms of treatment plan or protocol, is that what you have laid out on the website or is it very specific to symptoms? Because I need you to mention industrial, so for certain circumstances, or do you just have a very Okay, here's step one, right?

You're doing these two for the first phase and then move on. So because the protocol itself, it's quite simple in terms of the amount of products we have and how comprehensive they are on their own.

So the remover, which is the phase one, phase two optimizer plus cellular, also protective and also it's a mild uretic. It helps with flushing toxin from the kidney perspective.

We added something called golden broth there, which is beautiful for flushing and supporting nephrons and elimination of toxins from the renal activity without losing minerals, just a diuretic without the mineral loss.

So things like that, dandelion as well. Because we all use the common pathways for toxin elimination. You don't need to really get deeper into the understanding on the specific parts of the protocol in order to support your detoxification pathways.

Now, again, the focus products are meant to be used by either the guidance of a practitioner or if you were tested already, that's something that will support your findings to make your protocol more comprehensive.

But at the end of the day, it always comes down to your liver functionality, your kidney functionality and the proper binding of toxins through the intestinal tract so we avoid reabsorption.

And if we take care of those elements, and of course, protecting ourselves throughout the process, we're taking care the vast majority of the elements that are needed to optimize detoxification.

It doesn't need to be that complex. The problem is that, unfortunately, this was something I encountered multiple times. from many years that protocols for detoxification, they should be complex, expensive, and hard to be used.

And it's not meant to like that. Actually, if you go to the root medicine of all these types of protocols, when it comes to Chinese medicine, it becomes to Ayurvedic medicine.

will go to a Chinese doctor in the most traditional sense. We'll grab a few herbs. They will mash them with Morton Pistol. Then we'll put them in a nice tablet and they will give it to you.

You will take it a couple of times a day. Those were just herbs that were supporting internally all these receptors. Now we have fancy names for that.

And now we understand the biochemistry behind them. This guy, they didn't, but they understood the core philosophy of how our body functions. And that is enough.

It wasn't complex or expensive, and still they got a lot of things done and fixed and healed. Now we're just using the same rationality, the the wisdom.

We just apply a little bit more modern concepts to deliver this in an easier way to everyone. But the fundamental pieces are still there, embedded. If you see the formulas, you'll see all our botanicals.

They're all Earths, and we have that nature, natural wisdom internally, with all these receptors receiving this input and optimizing what they do naturally.

So we had the connection between nature from the outside and internally. And we just need to provide that input. Again, these things were coming in our foods, in the environment, we were doing this on a daily basis.

They were rooted in cultural practices. We just lost them. over years because we got too fancy, too wise, to technological. And now we dismiss that these things are actually great ways of improving our biology and our physiology and health and allows us to thrive.

So I'm bringing this back. into the equation in a simplistic manner. And again, it doesn't need to be that complicated, and it does not need be harsh.

If you work with the physiological potencies and you don't overwhelm your receptors, you do not create a strong flush. You just keep things moving consistently and optimally.

Why should it? This is working in your body every single day. We just need to optimize it. Yeah, it's interesting. I mean, that is the most profound example or epitome of natural medicine.

And I can speak to that when I went to visit my cousin in Sicily and we were walking just along the roads in the mountain village. He would point out different flora and different herbs.

One for digestion, one for if you have a rash, on for a mosquito bite, if one of you ever have cold.

Surfactants, Oral Health, and Microbiome Balance

And he's just pointing them down to suggesting me to smell, taste, try, touch. I just asked him, how do you know what all this is? And, he looks at me and he says, How do not?

How disconnected are you? And it's true. I'm guilty of charge for many years to see healing solutions around me, around my environment. being completely clueless how potent, how effective they were, and how cheap.

Literally go out there and find them. Do you have already a beautiful infusion, a little beautiful tincture you can do at home? I used to make my own bidders at Home.

I didn't want to pay so much money for just a ticture. So I grabbed those herbs and let them sit in a good quality vodka for two months or a month and a half, and I have my own teacher for the rest of the year.

And guess what? Amazing. Like, best teacher ever. It was made by me, in my home. Had my input. I believe that… It's remarkable what's overlooked. Yeah, exactly.

and, I remember my grandmother, they knew about this Earth. And you, they will go to the apothecary or they would go the herphology store and they'll grab them and use them for multiple purposes.

Me? Clueless. Give me an aspirin or whatever. I have no clue. Um, I had to re-trace those steps to learn, relearn that beautiful wisdom. that we're losing.

It's innate in our biology, right? We have plant receptors. We evolved with plants. I mean, plants are healing and instead now we go to pharmacology, all right.

So we are certainly disconnected. And that's why my philosophy is we just no longer living in congruent with our And unfortunately, although we are living longer lives, it doesn't mean we're living healthier lives.

And, unfortunately but worse still is that the youngest among us are now becoming afflicted. So that's where I worry for our children. It's interesting when you said going into your backyard or I have my child go scavenge dandelion, because I'm a huge proponent of dandalion and increasing bitters for bioabsorption to bind to toxins for natural elimination.

We have it growing in our fields naturally, right? There's so much that we can source that, we don't realize, but we see them as weeds, as an example, right?

The difference between a flower and a weed is just our orientation, how we describe it. But yet there's, so, much power within that are our herbs. And so I appreciate what you put together.

and shared. It's interesting too, because when I had asked you in person, you know, DMPS, DMSO, chelation therapy, very, relevant obviously with mercury toxicity, any of these heavy metals, which we now accumulated, we elegantly discussed at the beginning of the episode.

You said, no, these are all calcium EDTA. These are very aggressive sources. And you said here's a better mousetrap, here is a solution, more gentle. that coincides with how your body intended.

Exactly. I mean, the, these trunculators, for me, it's a, is not a hard no. There's maybe a place on time for using them, but for any therapy that's going to be used, with this model which I, it's my favorite, which is consistency over time rather than trying to run a sprint and flush things out in a few weeks or maybe a month, Which I believe is very risky for your biology or microbiome, your everything involved in the process.

that never was the natural form for detoxifying anyway. So what happens is that they will strip out so many other good things. And people can argue, well, but the mineral miners, they do that.

Yes, we're more adjusted because the potency is adjusted for our biology to cope with. But when you use EDTA or DMC, that's so strong. They have so much strong binding capabilities that there's going to be collateral damage every single time.

And the problem is how we recover from that and how long it will take. So the microbiome downsides of using EDTA. the other biological elements, cell perspective, gut lining perspective et cetera, are concerning.

So again, in a proper setting, when the proper situation, maybe, but on just a regular recommendation, there's

many protocols I've seen from a lot of people recommending this type of products in their detoxification protocols.

I've tested hundreds of People using gentle approaches and the reduction patterns are fantastic. 30-40% reduction within three meals to six months, depending on the nature of the toxins we're looking at.

So I don't see the reason why we should use something stronger when we see that the most benign forms of binders are working equally. as good as the others, or if not better, because of the less risk factors we're adding into the mix.

Well, I'm certainly eager to try your formulations, both of myself and our patient population here. So I know we'll include all that in the show notes for our community here, how does the oral microbiome, what is the connection with the world microbiomes and how that's implicated in all of this?

Obviously going back to your background. So when it comes to the oral microbiome, it's a seeding piece for the gut microbiomes. And it is also an informational piece.

We receive so much input in this area of our bodies and coming from the outside. The mouth microbiom has a modulatory effect on those pieces of information beyond everything else we know that it's associated with.

The informational part is a huge piece of what the microbiome of the mouth does. And so we bring these microbes into the gut. Then, of course, there's a filtering system.

That's why we have to be careful about certain things that are bypassing the filtering systems naturally, like talking about things are aggressively forcing an entry of a certain probiotic, for example, or certain nutrient, et cetera.

We need to be mindful that those barriers exist for a reason. Now with the proper filtering, with a proper modulation and the perfect balance, this is a great piece for supporting the immune system functionality.

So the new system is tightly connected to the oral microbiome status. and what information we're bringing in from the external side to the internal side.

Being most of the digestive tract is still external, but there's compartments. Now, the other piece is that the microbiome of mouth gets majorly fed by foods that we reabsorbed in the intestine lumen.

So the microbiome of the gut actually is responsible in a major way to feed properly the mouth microbiomes. We'll reabsorb nutrients from the cut and we bring them back to the salivary glands and now we distribute them evenly in the mouse microbiote.

That's actually why I was so shocked when I saw that the microbial patterns were so stable over time. within the analysis done on different niches. And the reason why, because I thought, well, this should be all over the place.

Because we open the mouth, we eat different things. We chew from one side or the other. So the distribution of the foods, it's a mess. How we can keep stability in the compositional patterns of the mouth microbiome.

The reason is because we're not feeding the microbiomes of mouth when we chew foods, but when reabsorb those nutrients from the gut into the mouths. That's actually how we explain the nitric oxide production beyond enlargening pathways.

On the endothelial side, we produce nitric oxide when we reduce our nitrous oxide synthase to lower levels that will sustain the nitro oxide production because we're bringing these nitrates back to the mouth after they were reabsorbed in the gut.

And then they are processed by certain bacteria in their mouth and then we've reduced them from nitrites into nitrides. Then we swallow them again and in stomach they become nitrich oxide.

if the mouth microbiome is in balance. That is a very important part of the equation. And that brings me back to what happens if we don't have a proper mouth-microbial balance, then we start sending inputs that are wrong.

They're inflammatory, and they will create reactions. and that triggers immune responses. that leads to chronic illnesses. Also, we're seeding the microbiome of the gut with abnormal patterns of microbes.

And we know that that can lead to very serious illnesses if some guys arrive there, like fuchsia bacterial nucleotin, for example, which is highly associated with colorectal cancer and other forms of cancer or porphyromonia gigivalis, et cetera.

So now we start Closing the circle where the gut microbiome supports the healthy status of the mouth microbiomes and the health microbiom of mouth supports normal balance in the immune side and also the guts microbioms status.

So we are synergistically collaborating. Now let's add toxins into the equation. Toxins are going to affect digestive process. So definitely they will affect the reabsorption of nutrients to feed properly and evenly the mouth microbiome.

Now you get mouth-microbiome imbalances and diseases associated with those imbalanced because of the toxicity factor. And if you do non-biological dentistry procedures in your mouth, Now you're using metals and chemicals and plastics and like all these resins and things like that.

They're loaded with plastics. And now you are swallowing them or getting exposed to them in various forms with different pathways affecting your own biology and adding more toxins into your biological toxic burden.

So it's all connected. Would people love to separate things? Me included before. The more I learn about different things, the more understand that we're just one single entity interconnected and all comprehensive in our systems without fundamental separation.

It's just an illusion we created. that we can put divisions here and here, and we think because of the anatomical structures, we're separated internally, the realities that were not.

So everything gets affected in full. if something goes wrong. If we're getting exposed to toxins, everything in your body will suffer. It's not just the gut, it's the microbiome, your liver, not your kidneys, It could be everything.

I don't know how much time you have left, but there's a couple of things that we use for saying that jogs. My big gripe within modern medicine is that, we segment and that's kind of the antithesis of holistic health.

not just one organ or one specialty. And while I don't want to undermine specialties, everything is connected. So you push on one, it affects elsewhere in the body, especially our fascia connects head to toe.

Even on the exterior, that's implicated. In terms of your oral microbiome testing, are you doing oral DNA tests, a periodontal tests? Any sort of testing you're doing there or no?

Not really. There's a certain value in testing. really not happy about, all the companies I know, and probably there might be some that I don't know that they might doing a really good job, is the push of antimicrobials after seeing certain microbes present in their samples.

Also the usage of saliva as the main sampling agent. Saliva, it is representative, but it's not the whole picture. So we have to be mindful that we're seeing a fraction of what the mouth microbiome represents.

on all the different niches internally in the mouth.

DetoxU Solutions and Gentle Detox Support

And the other thing is, again, the push of antimicrobials. They will see P. gingivalis or other red fruit bacteria in their prudential categories, and they will say, oh, you have to use this antimikrobial or this agent or And again, we have this linear, narrow-sighted view that microbes are growing more out of nowhere.

In a petri dish, you want to grow one microbe, one colony of microbes. You need to provide pH, oxygen, nutrients, temperature, et cetera. And if you don't provide the right settings, they don' grow.

Or you might grow something else. It doesn't happen in a very different way. If you provide the right settings, you will grow the wrong things. So if you see P.

gingivalis, agroactive actor, actinomyoset and comitans, and you'll see fusion bacterium nucleid and all this very aggressive, potentially pathogenic bacterias, think about how you're supporting your terrain.

Not just go after them and kill them. Because guess what? You're gonna get the same problem over and over. You are not fixing the environmental settings.

If you change the environment, you changed the growth patterns. And then you never have that problem again. Same with SIBO, same with CFO, and any type of dysbiotic related issue.

So that's my fundamental issue with those testings. They scare people and they send them to therapies that I don't really endorse. From the analytic part, if you have a good full metagenomic sequencing analysis for the mouth microbiome, I see a value, especially if we connect the dots with the gut microbiote testing.

You can see both sides and you can connect those even more, even deeper in what's going on in your microbial balance. Wisdom teeth removal. I mean, I saw some recent research where in the soft tissue, there's mesenchymal stem cells that you could harness talgus.

Are you conscious about the removal of wisdom teeth? How does that play into your practice? The body doesn't grow anything that doesn' need. Doesn't spend a single minute of effort growing something that we want to use.

The problem is that, we have a certain modern factors that are affecting the growth rates and the grow patterns of our mouth. First and foremost, we're not chewing.

We've hardly put some stress on our jawbones and our ligaments and joints. Were mainly passing foot without putting the vertical input on the physiological pathways of our mastication process.

So the vertical growth patterns are neglected and we start getting this residual horizontal growth pattern. And yes, of course we get cramping and tear apart and then orthodontists are doing a party because they have more clients.

Then the wisdom teeth are looked at the evil guy because, well, they're there pushing those teeth. That's fallacy. They don't have the strength to push that.

And actually, if we were more mindful about chewing our foods, probably we'll regain that vertical growth pattern in our jaw bones, allowing the space for those teeth to come out normally or not.

We're actually shrinking our mouth structures every single decade, every generation that passes. And that's one factor. Now, if you're going to remove them because of any justifiable situation, it needs to be done with biological procedures because I can't tell you how many times I've seen cavitations under And they say, no, chemitation is an illusion, doesn't happen.

I've seen open jaw bones with necrotic tissue inside rotting, smelling from an area that was the extraction site 10 years ago of a wisdom tooth. So don't go and tell me that that doesn' exist because I smelled it and saw it.

So that, if the procedure is done without that in mind, what happens is that there's necrotic ligament that stays there, the rotants, creates a chronic infection site, doesn't allow blood flow to come in and repair, and then you

have a chronically infected site that triggers immunological reactions across the body.

So if you're going to remove your wisdom tooth for any reason, you need to do the biological procedure with ozone laser, the proper surgical instruments and removing that ligament, leave that blood flow to come back and repair naturally that structure that was damaged because of that surgical procedure.

Are you doing a 3D cone bean scan to look for cavitation? It should be. If you don't see it, you do not know. So that's why the same rule applies with testing.

In the imaging world, I'm not a huge fan of radiation. is still lesser evil compared to missing something that can be so major in terms of health concerns.

So when I had my wisdom teeth removal, and to me this was medical malpractice at the time, but needless to say, my understanding is that, as you said, that the body doesn't make mistakes and each tooth correlates with an organ function.

My conception is your wisdom tooth connects with your small intestine and your heart. Interestingly, after the removal I developed an arrhythmia and I develop very sensitive GI issues that were not fixed for decades to come until I had developed my own understanding of how this needs to be corrected.

And then kind of you work your way up the other teeth, I think the second generation pancreas and spleen. Needless to say is that each tooth correlates with specific function.

When, when people come to see you and they complain of a specific tooth, are you then tying that into a different, uh, organ that's correlated and trying to then connect at that organ level?

For academic purposes only because I don't see patients anymore and not practicing so but I can speak on behalf of my biological dentist colleagues that are working and sweating to get people better every single day.

I'm in the comfort zone right now because I stepped out of that, but for the sake of having time to do everything I am doing on the side. It's a really bad excuse, it is what it it.

To your point, the connection of each organ to each tooth structure is known from centuries, like thousands of years ago. And that doesn't apply only to the meridians of the tooth, of each teeth.

It also applies to everything else in the body. As we mentioned before, everything is interconnected through this huge system that we call the ECM. And our biological feedbacks are there.

So we tend to believe that if something happens in the mouth, our intestines, they don't know nothing about it. Or something that happens happens to your ears, and our knee joints are not aware of that.

Actually, everything is being read and processed in an integral form. Whatever we know about, or we get symptoms because of, that's a different situation.

But things are happening on an intracellular level from these communication pathways that they were called meridians by Chinese medicine. So when you extract the tooth, yes, There's a potential connection between other organs, and I've seen even reversal in certain symptoms when things are treated accordingly and biologically.

So I have seen both sides of the equations. I'd seen symptoms arising from certain procedures not done biologically, I had seen resolution of symptoms by doing things or correcting things with the biological input in mind.

And that's why it's so important, again, to respect the biological principles of our body. Not because it is cooler or it was just the trend or no, this is just coming to the fundamental needs of body to repair and heal.

And any interference can affect that process. Again, the body knows what to do and how to it. But man-made or the

touch of humans in the process, the interference of our technology and our ways that are supposed to be more modern, sometimes are affecting the natural pathways for our body to do things in a proper way.

And I'm all about going back. reversing that philosophy to the natural roots of medicine. I've always been taught and learned if man made it, stay away.

If nature made, it's okay. Sure. Nature is the only medicine and we usually are very, very intentional in getting in the way of what nature knows how to fix.

And we, again, if you go to, and I will finish saying this if, well, I have only a few minutes more, unfortunately, but if go the biosybarinetic concept, where you have an input and there's an output.

If you had a fever, for example, you're blocking the input. That's why you correct the output when you use a medication to block the fever. But the input was created for a reason.

And if we respect those biological principles, everything that we optimize, every thing we stimulate naturally, provides a very better input and a better processing in our bio-sibernetic systems.

So the output becomes better.

Biological Dentistry, Closing Advice, and Outro

like, for example, detoxification support products, we're not switching the input for a different one. We're supporting the inputs and the modulation of the processing so the output becomes more efficient.

That's it. It's nature optimizing nature and nothing else. Everything else that is artificial, synthetic, man-made, what it does is the opposite, blocks the circuit.

So now without the feedback, without input, the body resolves the symptoms, but it doesn't resolve the root cause. Yeah. The environment remains the same.

Two last questions. One is, maybe you just addressed it, is any parting advice for our listeners given today's discussion? Trust your bodies. Do and don't do.

Be proactive, be aware, and be conscious. Do things that are beneficial for you when needed and then enjoy your life and stop. Because, you know, if you are taking a product every single day all the time, it's going to tell your body you're not well and you not in the right place to thrive and enjoy life.

So become proactive. Amazing. You should, because there's a lot of challenges right now in this modern world. But when you finish, finish with a smile on your face and let your body rest and enjoy your life because you are healthy enough.

If you feel healthy, you should enjoy that time too. And by design, we're meant to be healthy not sick. So just shut down for a minute from all the input on the information and then enjoy life.

This is a beautiful world, regardless of the toxins and everything we're getting on the side. It's a wonderful world and we should be enjoying it. Yeah, it's estimated that adults, I think, smile and laugh 14 times a day, while children upwards of 140 times per day.

We forget that we are really just big adults. Big kids, rather. And so incorporating more plain enjoyment is certainly critical in our modern stressful era.

Last question is, if you could have any superpower, what would it be? Superpower? I would love time traveling. I was born in the eighties, and I think part of me is still stuck on the 80s.

Uh, I always joke about this, but it's actually true. Indiana Jones and Back to the Future and things like that. I didn't step forward from that phase of the world, but also because I have memories about me enjoying with my friends outside, disconnected from all this technology and just enjoying being us.

And that social component, I think, is getting going away because of the modern advancements. And I think that was a beautiful time in the world where we were pretty connected.

It felt like everything was okay, no matter what. I like that peace of mind that it was given. But yeah, I have good memories of that time. This has been a genuine pleasure.

We're going to link everything in show notes. Where can people learn more, find you, buy the products? d.cu.com, that's our website. I'm also reachable through social media, Dr.

Haroldo, my name, dr.haroldo in Instagram, That's my account. dtobs.u also is the account on Instagram for our company. Should some questions, if you have them, happy to help.

I'm present as much as I can in terms of connecting with people that are interested in getting things done in a natural and optimal way. And I will send you something for later as a gift for all your audience that they can use on our website.

That's part of the way of this conversation. We appreciate that. Thank you again. Certainly this has been an eye-opening conversation. I appreciate the depth of your experience and expertise and the knowledge you've provided us in terms of exposure and also the solution.

There definitely is a way out and so we just need to be mindful, ideally proactive, but certainly there's ways to get unstuck as well. Definitely we'll add everything the show knows for everyone who's interested.

This should be a staple in everyone's protocol, given our deluge of toxicity in our modern area. I know we're doing testing. We're seeing that every single day within our patients.

And so it's quite essential at this point. But nonetheless, I hope you guys enjoyed everything. Thank you. Until next time, stay healthy and stay proactive, my friends.

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