

Jonathan: Welcome everyone. Jonathan Hunsaker here with Organixx, and I'm joined by TeriAnn Trevenen, our CEO.

TeriAnn: Hey, everyone.

Jonathan: And good friend, Mr.—Mr.? Dr. Daniel Nuzum.

TeriAnn: Mr. Dr. Daniel Nuzum.

Dr. Nuzum: Mr. Dr.

Jonathan: So, on today's episode, this is our second episode of our podcast, a little later in the episode we're going to talk about nutraceuticals versus pharmaceuticals, but at the end of our first episode, we were talking about synthetic versus whole food supplements, understanding the difference. And as we were kind of talking here, before we started the cameras rolling, we were just talking how there's different levels of synthetic versus different levels of whole food. So, do you want to talk on that a little bit more? Give people a little bit better understanding of the different levels of synthetic, what that means?

Dr. Nuzum: For sure, for sure. You have, on the bottom end, in our last podcast, we talked about you can actually extract—you can synthesize vitamins out of petroleum waste product, right? You can actually extract them from other things. There are other ways of synthesizing vitamins. And not all of them—I would say synthesizing them out of petroleum waste product is probably the worst. That's on the bottom, for me, the bottom of the barrel.

You can synthesize them out of other food products. I think we touched on a lot of vitamin C on the market comes from GMO corn. That's not—wouldn't be my choice of a supplement. So, we have different ratios. You get into mineral supplements. There's a whole other thing, mineral supplements. Oh man, some of your—a lot of calcium supplements, they have a hard time keeping the lead out of calcium supplements because they're extracting calcium from like limestone and things like that, or from oyster shells and things like that.

Jonathan: So, you're saying we don't absorb rock very well?

Dr. Nuzum: Yeah, we don't.

[crosstalk 0:02:12]

Dr. Nuzum: I tell everybody "You take a rock, you'll probably pass one."

Jonathan: So, if somebody does need a calcium supplement, how do they know that it's coming from a good source? I mean is it just a matter of go to your local health food store and ask somebody there? Or how do they know?

Dr. Nuzum: If it's a carbonate, if it's a calcium carbonate, that's pretty much it's a rock.

Jonathan: It is?

Dr. Nuzum: It's a "rock." A calcium lactate may be a little higher, but it's—

Jonathan: Higher quality?

Dr. Nuzum: Higher quality, but it still, I wouldn't take that personally. The best place, I mean still, the best place to get food is from food. You want to get nutrition from food. And so, we go over to things like broccoli has massive amounts of calcium in it, so does kale. A lot of your cruciferous vegetables, your cruciferous vegetables are—part of the bitter taste that you get from those are from the real alkaline minerals, like calcium and magnesium are part of what gives them their bitter—the little bit of a bitter tang to them. You know what I mean?

But those are the components that give those that flavor. So, they're very high in your alkaline minerals like that. So, there's—we have these rocks with amino acids attached to them, called chelated minerals. There are ways of taking different multiple amino acids and attaching them to one small component of a mineral, and it makes it almost an organic element. Almost.

So, anything that's mineral is inorganic, anything else is organic in this component—in this session we're talking about here. And a lot of times, I'll talk about an inorganic mineral is a salt, or a rock, something like that. Inorganic minerals are unorganized minerals. In their unorganized state, our body can't use them very well. So, that would be a salt, or a rock, those types of things.

All of those things run high—you have a high probability of becoming toxic from those things if you take too much. Your standard mineral supplements, in most cases, they're using inorganic minerals, or mineral salts. So, you see a carbonate, or an oxide, or a chloride, those are all mineral salts and your body doesn't utilize those very well.

Also, those can run risk of becoming toxic. You can get too many. If you're taking chromium chloride, or a calcium carbonate, or magnesium oxide, those are all very, very common in the supplement industry. Those salts, because they are, they're a mineral salt, they can accumulate in your system and become toxic. They can cause some toxicities.

So, if you're taking those, you want to minimize the amount that you're taking. On the flip side, let's talk about the different levels of whole food supplements. So, you have just they went out and picked a bunch

of beet root, ground it up, and put it in a capsule. That's one level. You run into that in the supplement industry, that it's a clean beet root, even though it maybe wasn't organically-grown or something like that.

If it passes your heavy metal testing and things like that, that they have to do to put it into a supplement, they'll take something like that and just grind it up, put it in a capsule, and that would be a beet root. And it's a whole food. It's not the top of the line, but it is a whole food. You can also do ginger root, or you could do—

Jonathan: Your body's at least going to recognize it, right?

Dr. Nuzum: Correct.

Jonathan: As a food, as opposed to like a synthetic, right?

Dr. Nuzum: Right.

Jonathan: It might use, because it's desperately needing anything, but it's not going to respond to it long-term the way that it will a whole food.

Dr. Nuzum: Right, a whole food. So, this is something, this would be like I would equate that to kind of adding special things into your salad to fortify your salad. You know what I'm saying? Okay, so it's not top of the line, but these are at least food. These are food sources, food supplements. Now you take a step up from there and you do an organic, organically-grown beet where they take and juice the beet and they freeze-dry the juice.

Now you took a big step, that's way, way higher. Think about this. How many beets could you eat versus how many beets could you juice and drink the juice? You could fit way more beets into your system by juicing them than you could by eating them. If you ate two, three whole beets, your stomach would be full. But you could go juice that much and drink it throughout the day easy, right?

So, if you're making a supplement and you take organic beets and you juice those organic beets, freeze-dry that juice, put that into a powder and put that into a capsule or a drink, or anything like that, now you've got a real high-quality. That's a high-quality supplement. Just we're using one vegetable here and just the basic ways you can turn a vegetable into a supplement.

So, this, taking an organic beet, you juice the beet, take the juice, freeze-dry the juice, turn that into a powder that you would use in a capsule or in a drink, or anything along those lines. That's a high-quality food supplement, whole food supplement.

Now you could take and do organic apples, carrots, celery, ginger, beet. Now you've got a really zingy, tangy juice you could freeze-dry. You juice all that, freeze-dry it, put that into a capsule. Now you've got a salad in a capsule. You know what I mean? You get all that nutrition in one—packed into one source.

Now you can take organic whole foods like that, if they're a seed, let's say chia seeds or flax seeds or almonds even, you could take nuts and seeds, you could sprout them, where you take an organic nut or seed, sprout it, which takes—think about, take a walnut, one walnut can grow an entire walnut tree. So, all the nutrients, all the information necessary to grow that huge walnut tree is all concentrated down in that walnut.

So, just eating the walnut is great, but if you can take and sprout that walnut, you've unlocked all of that information and nutrition in the nut. So, you sprout that, or let's take, for an example, wheat grass. Wheat grass has far more nutrition than the entire wheat stalk when it's full-grown. So, this little grass has been sprouted from the seeds, grows up four or five inches, they cut that, they juice that.

You'd freeze-dry that juice, you have massive amounts of nutrition in that wheat grass juice. But if you took wheat seeds, you wouldn't have that nutrition. You can't get that nutrition. You have to actually sprout those seeds to unlock that nutrition. Does that make sense?

TeriAnn: Yeah, it does. It's advancing it to a further stage in its life cycle where it's more developed, it's giving you more than what you just get in its most basic form.

Dr. Nuzum: Correct, correct, correct. So, taking whole foods that can be sprouted and sprouting them, so you take an organic whole food and you sprout it, then you do whatever extract that you're going to do, whether it's juicing it, or you're looking for a specific component in that, like turmeric, we're looking for curcumin. We grow the turmeric root, you've got to take that through an extraction process to get the curcumin out of it, right?

So, that's just one of, again, 300-some different phytochemicals that occur in turmeric root, right? So, if we want to concentrate that, there's a different process, but if you have a seed or a plant that you can sprout and then extract, you've unlocked, typically, between 100 and 1,000 times more nutrition than it would have if you just took the seed. So, there's massive amounts of nutrition that you unlock by sprouting it.

So, so far, let's talk in this whole food supplement, if you take an organic fruit or vegetable, juice it, freeze-dry the juice, you can concentrate more, you can get multiple fruits and vegetables in one capsule that you would take that you would never eat on a daily basis, and you can get that, right? Now if you took and added to that sprouted, different foods or seeds that you could sprout and then juice, and freeze-dry that juice and put that into a supplement, you've expanded the available nutrients, alright?

So, here's the difference. If we go back, let's talk about the standard American diet. The standard American diet typically will supply trace amounts of 17 essential nutrients on a daily basis. Well, we know that we need between 73 and 90 essential nutrients on a daily basis. Let's say we get large doses of those 17 basic nutrients. Would you want large doses of those or a small consistent dose of all 90 essential nutrients? I'd want the whole 90.

TeriAnn: Absolutely.

Dr. Nuzum: Because think about it. If you're missing nutrients in your nutritional profile, you're—I tell people your dam is leaking. And everywhere that you're missing a nutrient, you've sprung a leak. And that dam's not going to function right until you plug up all the holes. And so, nutrition is our front line of defense against toxicity.

So, in our environment, we're exposed to toxins. It's a matter of fact, it's not something we can escape. We're going to deal with it, our children are going to deal with it, their children are going to deal with it. Our front line of defense against toxicity is our nutrition. If, again, if our dam is leaking, those toxins are leaking through into our body. And your nutrition is your dam. So, your nutritional profile, if you don't have that dam plugged up so that it's not leaking, all those toxins that you're getting exposed to are leaking right into your system.

TeriAnn: Yeah, and I think that's an important point. You talk about two things there. You talk about sprouting and you talked about toxicity. And we're talking about supplements, what should you look for in your supplements, what should you be aware of in your supplements. You really should be looking for supplements that have ingredients that are sprouted, you should also be looking—it's another important point, at toxicity. Are your supplements toxic? Because they certainly can be.

Dr. Nuzum: Sure.

TeriAnn: You need to know what's going into them and why toxicity's important. You don't want that toxicity going into your body, right? And those are very important things. Those are two really important points when we're looking at supplements, when we're looking at “What supplements should I take? What does that look like for me?”

It's important to know what's in them, and I think knowing how they're manufactured and how your supplements are created, and then also, are they worried about the ingredients that are going into the supplements? Because that toxicity level can be there in high amounts if you're not careful.

Jonathan: And I'm going to jump in. The third thing really about everything you said is if you're nutrient-deficient in somewhere, then that's where the toxins get in. So, aside from even a manufacturing of a supplement, if you're not—talking about nutrients being the dam, if you don't have a certain nutrient, it's going to be filled with something.

Dr. Nuzum: Correct.

Jonathan: And it's going to be filled with something toxic as opposed to something healthy. I know we've talked in the past about iodine and iodine deficiency, that your body is going to fill it with something, like a chlorine, or a fluoride, or something like that. And so, there's conversations of fluoride in the water and people are worried about that. Well, one of the best ways to protect against that is making sure you have enough iodine in your system, because your body will use the iodine as the nutrient and it will be dam—

TeriAnn: To counteract that.

Jonathan: —to block the fluoride from even being able to get into the system.

Dr. Nuzum: Absolutely, absolutely. In the—what's interesting is iodine, of all of the halogens, iodine is the biggest of those elements. So, your iodine receptor sites are big. The problem is, you've got chlorine, you've got fluorine, you've got bromine, which are all smaller—the elements are actually smaller. So, those smaller elements can fit into that hole real easy.

So, that hole is wide open unless you put iodine in there. Once iodine's in there, you can't fit fluorine into it, you can't fit bromine or chlorine into that. And so, the iodine sits there blocking the toxins, and the toxins have to just—if they don't have some place to plug into, they don't. That's the point.

Jonathan: Absolutely, that's the point.

TeriAnn: And I think to tie that all together, to Jon's point, what I was talking about, what you're talking about, toxicity is everywhere, in everything that we're doing now. And it's an important topic to understand and be knowledgeable about. Everything you're ingesting into your body has toxicity. What are those levels? And to what you were saying and Jon's point, what is our body being filled with? If it's fortified by all of those things that we need, that toxicity's not impacting you. But also, being careful about what you're ingesting, because toxicity levels go up based off of what you're taking in.

Jonathan: Exposure.

TeriAnn: Exactly. It's so important to be aware of that and understand that, from start to finish, how toxicity impacts you.

Dr. Nuzum: The cellular health, to keep a cell healthy, you have to have the basic—in a biochemistry lab, your basic formula is there has to be 45 percent detox and 55 percent nutrition. The amount of activity that has to go on in the cell has to be 45 percent cleaning and 55 percent restoring nutrients. And if you

mess with that ratio, and more cleansing than nutrition, or more nutrition than cleansing, it will disrupt the cell. And then if—

Jonathan: It's fascinating. And it brings me back to comments and things that you see online all the time, like "You don't need to detox. Your body can do it on its own." But let's just take it down to the cellular level, a cell in a lab, aside from anything else. 45 percent of that needs to be cleansing. What do you think you need to do with your body that's made up of all these cells, right?

There will absolutely be a future episode, I think, if not two or three, that we dedicate solely to detox. I know you've written a book on detox, and that there's a lot to talk about that. And I think there's a lot of misinformation about detoxing that it's just important for us to clarify for people.

Dr. Nuzum: That'll be great.

Jonathan: So, let's pull it back to the supplements for a second, because I really want people to understand the different levels of a whole food supplement. Understand, what we're talking about right now, if you're at the organic juiced, and even sprouted level, versus just a basic beet, are we 20 times more potent? Are we 50 times more potent? Just at that level?

Dr. Nuzum: Yes, probably around that, somewhere in that ballpark, because you've gone from—if you just take a conventionally-grown beet, grind it up, put it in a capsule, that's one level of whole food supplementation, right? If you take a step up from there to an organic beet, same process. Now we take and we step it up from there, we take that organic beet, we have its brothers and sisters involved.

So now we have 10 organic beets, we juice them, we take that juice and put that into a capsule. Now we just expanded. We have 10 times that nutrition, right? Now we take and we add sprouted wheat grass to that. Now we've just expanded that nutritional profile exponentially.

Jonathan: Tremendously.

Dr. Nuzum: Yes, just massively. We went way broad, very, very wide in that nutritional profile. Now we're not adding massive amounts of each individual nutrient. What we did is add more nutrients, a wider spectrum.

Here's one interesting thing about supplementation and toxicity. This is an important thing to understand. If I take one particular nutrient and I drop that one nutrient, magnesium, let's just use magnesium, if I take magnesium and I drop one nutrient out of this 90 nutrients that I need on a daily basis, and I just take massive doses of that one nutrient, that's going to cause waves through my nutritional profile, just like if I went out back to the pond out here and threw a big old rock into the pond. It's going to disrupt things. It may correct a magnesium deficiency, but if I take—if I continue to take large amounts of that single

nutrient, I'm going to start pushing other nutrients out of my profile because there's only x amount of space within my body. Does that—does everyone follow that?

Jonathan: That makes sense.

TeriAnn: Yeah, absolutely. It makes perfect sense.

Dr. Nuzum: And so, you're—but that's the same with any other nutrient. So, you don't want to consume large amounts of one particular nutrient all the time. You want to have a broad spectrum of nutrients. That's where you avoid toxicity altogether. A little bit of everything's better than a lot of one thing.

Jonathan: Love that.

Dr. Nuzum: And really, that's the case. I mean if you own a house and you fill it with 20 couches, you're out of balance, right? You know what I mean? And so, it's the same thing in your body, in your chemistry, if you take and just put one nutrient into the system, it's going to start throwing other things off.

Jonathan: So, talk to me for a minute, Doc, about fermentation. Because we're talking about continuing to improve the ingredients that are inside of a supplement. What does fermentation actually do?

Dr. Nuzum: The best way to equate that would be like predigesting the food. So, your digestive process, we fast-forward it a step. So, something is—I'll give an example with our collagen. Here's our collagen. The collagen is predigested collagen. So, we have all those amino acids have already been broke up.

I'll give you an example. Let's take, if you eat a hamburger, that's one piece of meat. We're using protein. I'm trying to use protein as our example here. So, we've got that piece of protein, right? Your system will digest that piece of protein better and quicker, and it will be able to extract nutrition out of that better than if you sat down and ate a side of beef. You couldn't eat—there's no way you could digest a side of beef in one sitting.

So, if you take collagen, undigested collagen, your digestive system's going to have a hard time breaking that down. So, you predigest it, which unlocks all of those marvelous ingredients in the collagen, and when you consume that, your body just picks up those nutrients because it's already predigested.

Jonathan: So, talk to me in terms of like how—where fermenting ingredients in, say our Turmeric 3D, right, our turmeric is fermented, or the vitamin D3, like what's that process, and why—I understand the concept with the meat, let's talk about it as well when it comes to an herb.

Dr. Nuzum: Right. Okay, so we take turmeric, turmeric is great, has been used for thousands of years. The reason in ayurvedic medicine, in India, the reason that they took and put turmeric in curry powder,

which every house in India uses, is because that was a primary medicine for the population. So, this goes back not 10 years, not 20, not 100 years, this goes back a couple thousand years. They introduced turmeric into their entire society to try to keep people from getting sick.

And so, turmeric powder just became part of their food. It's just part of their diet, right? Now because they get massive exposure, every meal from the time they're conceived until they die, because Mom's eating it, then everyone's eating it, they have—that powder, that turmeric powder works really well for those folks.

Now you step out to we're all of European descent. Turmeric didn't really grow where our ancestors came from. But what we find is turmeric extracts work just as good for us as they did for the people in India. So, what we had to do is find a way to make the ingredients in turmeric more available for a wider crowd.

So, we look at the different components. Curcumin, the active ingredient in turmeric, is a very—it's a flavonoid, and that's where the flavor of turmeric comes from, it comes from curcumin. When you have something that tastes like turmeric, it was the curcumin that gave it that flavor. So, this is a flavonoid. That flavonoid is very large. It's a big molecule and it's not easy to get that through the gut wall because it's so big.

The other problem with it is it's very sticky. It's a gummy-like substance, okay? So, when we take and feed this to the microbes that ferment it, they like shrink-wrap it, break it down into smaller molecule, which makes it far easier to just—it just passes right through our gut wall then. And we don't really have to do a whole lot to it once we've fermented it through our process.

And the interesting thing is we don't just use one process. Our Turmeric 3D, we have three different processes that we take it through. And so, literally, when you consume Turmeric 3D, you're consuming three different turmeric extracts all in one product. Then we have the ginger in there—

Jonathan: So, before we go too far down the T3D, I just want to stick to the ferment—we'll probably do a podcast—

Dr. Nuzum: We'll talk about that later.

Jonathan: —all on Turmeric 3D. What I really love is where you're talking about what the fermentation did and how it shrunk the molecule down and it's making it that much more bioavailable, makes it so it passes through the gut wall that much easier. And I think that's—you see things on the internet where they say, "Hey, if you're going to take turmeric, make sure you have a black pepper with it so that your body can absorb it more," and that's true if you want to use turmeric for a few days, or for a week. But long-term, the effects of black pepper on your gut biome is detrimental.

Dr. Nuzum: Detrimental, right.

Jonathan: It's not good for you. And so, yes, black pepper helps, but for a long-term use of it, don't do it with black pepper. Yeah, that's the opposite effect.

Dr. Nuzum: It can cause inflammation in the gut.

Jonathan: And so, as we talk about things, the fermentation matters for something like a turmeric, right? And again, this isn't to plug Organixx products, this is for—

Dr. Nuzum: No, this is just an example.

Jonathan: —anything that's out there, just understanding what that fermentation process does. And it's just another level of quality.

Dr. Nuzum: Right.

Jonathan: And so, Doc, after that, I want to talk about in terms of supplements, because we're talking about bioavailability, what makes something more bioavailable. Delivery systems. I know that you're very big on fulvic and humic acid. But I want you to talk briefly on what that is. But then I want to talk more about what are some other delivery systems.

Dr. Nuzum: In the supplement industry, we have all kinds of different delivery systems. You have—you come back to the tablet, capsule, or liquid, or powder. Delivery systems even start at that level. So, you have—you can have a powder that you mix in water or a smoothie, that's a particular type of delivery system, and there's ways of—there's a thing, a process called micronization that you can take a powder through and it actually takes powders and shrinks them down into smaller and smaller size.

They pulverize it in a micronizer. It's a pretty cool process. That's a process you can do. I've had some products that we've done that with in the past that we had a hard time keeping them in the bottle. They were so small they would actually go—they'd come through the—the powder would fall through the bottle it was so tiny. Which is a way of creating a delivery system. So, that's one component.

You have—you can have a liquid supplement, liquid versus a tablet or a capsule or a powder. That's a slightly different delivery system. You have tablets, you have capsules. And a lot of times, as far as those go, that aspect of delivery systems go, we're looking at how quick we're trying to deliver something. So, typically, a liquid or a powder, you're going to get into the system, into the digestive system faster.

The next would be a capsule, and then the next would be a tablet. And then you have like enteric-coated capsules and enteric-coated tablets, you have double capsules, you have double tablets. So, these are all—those are a crazy amount of delivery systems, right?

Jonathan: All designed to talk about the speed of the delivery, right?

Dr. Nuzum: Correct.

Jonathan: That's what the different forms are.

Dr. Nuzum: There's speed, and then you also have—you may be trying to protect a certain ingredient, get it past the stomach or deliver it to a certain area in the intestines and that kind of thing. But it's typically the speed of delivery. Those are those types of delivery systems.

Jonathan: Is there one that's better than the other? People say liquid is better, or a capsule is better, or a tablet is better. Is there—

Dr. Nuzum: There's the honest answer is it depends on what you're trying to deliver. So, typically, a tablet is harder to break down in your system. There are—capsules deliver things very, very quickly, because typically, most gel caps you can get them wet with water and they'll dissolve. And if you're not trying to protect a specific ingredient, that works fine. But sometimes, you may need something like a hard tablet to get the ingredient past the stomach acid, so it doesn't get damaged by the stomach acid. Or you may enteric-coat a capsule, so it doesn't break down in the stomach acid.

TeriAnn: Can you give an example of something like that, a product like that that would *[inaudible 0:33:41]*

Dr. Nuzum: Yes, let me see here. A common product. Okay, mucuna is a—they call it the velvet bean, or the dopa bean. It's, you can get L-dopa is the amino acid peptide that breaks down into the neurotransmitter called dopamine. This bean actually has dopamine precursors in it. But those dopamine precursors get destroyed in stomach acid.

And so, if it isn't mixed with something to protect it, then it won't make it to your intestines where it gets absorbed. So, you have to enteric-coat a capsule of mucuna extract or put it in a tablet, or that kind of thing. So, in that case, a liquid would be really bad. A liquid wouldn't help. It would be—you'd destroy your extract.

TeriAnn: Right. Are there any whole food products where you'll ever see that? The question of tablet versus capsule in whole food products, are you ever going to see a need for a tablet in a whole food product?

Dr. Nuzum: No, no. That would be my—my answer would be no. You're better off with a capsule. The capsule is, one, you're not going to get any filler ingredients from the capsule, which a lot of times you have to use certain filler ingredients in a tablet, binders and things like that, which may not be good for

you or may not be the best. In a whole food supplement, you're trying to—you're just trying to get it into the system, so your capsule or tablet or powder even is just your carrying mechanism. So, it's just bringing it down the digestive tract.

TeriAnn: So, would you say then, is it safe to say that in most cases, tablets would be more of a pharmaceutical and capsules would be something you'd want to see more with whole foods? Because obviously, if you don't need it in a tablet form—do you get what I'm asking?

Dr. Nuzum: Yeah, I see what you're saying. So, if you have a specific extract, something where—maybe not even a curcumin, but something where you've extracted a specific compound from an herb, that's where you may need to use a tablet.

TeriAnn: Interesting.

Dr. Nuzum: On a whole food supplement, you shouldn't ever have to use a tablet. It should just—as a matter of fact, a lot of times, your stomach acid will be part of the activating mechanism of a whole food.

TeriAnn: Interesting.

Dr. Nuzum: And so, you want it to be—come in contact with the stomach acid.

TeriAnn: So, would you say it's safe to say, more often than not, your whole food you'll want in a capsule?

Dr. Nuzum: In a capsule. In a capsule. Sometimes you won't want it in a liquid because you don't want it to get—once it gets wet, some of the enzymes and things will start to break down. So, some things not necessarily in a liquid. Other things, you want it in a powder. If it's not a drink, then you just want to put it in a capsule, that kind of thing. So, that's that kind of delivery system. We also have another set of delivery systems where we are using different compounds to make the ingredients more bioavailable. And by bioavailable, I mean more capable of being assimilated by your body. Does that make sense?

Jonathan: Absolutely.

Dr. Nuzum: Okay. So, we want to add things to our whole food ingredients that are going to make the whole food ingredients be picked up.

TeriAnn: Actually, absorbed by your body instead of just passing through.

Dr. Nuzum: Exactly, exactly, exactly. And so, my favorite ingredients, because they are organic compounds, are fulvic and humic acids. I mean that's what I've done—I've been working with these since 1998.

Jonathan: But we're going to do a whole episode on fulvic and humic as well. But give just a three-minute overview. Like what is fulvic? What is humic?

Dr. Nuzum: Alright.

Jonathan: And what do they do? What's just the top—

Dr. Nuzum: Okay, so humic acid is something that we extract from a soil compound called shale, humic shale. So, we extract this humic acid. And humic acid is, let's see here, if you took a rainforest and was to compost it over like 2-3-4,000 years, the end result would be humic compounds. So, all of the nutrients, all of the phytochemicals, all of the nutrition, everything that you'd find in that rainforest would be concentrated down into this humic substance.

Jonathan: What are phytochemicals?

Dr. Nuzum: Phytochemicals. Okay, phytochemicals are the medicinal components of an herb or a fruit or a vegetable. So, you have the flavonoids from—

Jonathan: The curcumin of the turmeric.

Dr. Nuzum: There you go. Curcumin of turmeric, exactly.

Jonathan: What are some other examples just to give people an idea? Because you say phytochemicals a lot, and I want to make sure that everybody really understands what it—because it matters.

Dr. Nuzum: Yes, of course.

Jonathan: It's the stuff that does matter.

Dr. Nuzum: There are catechins from green tea. Those are your antioxidants. They're called polyphenols from green tea, but those are a phytochemical. You have your beta glucans, or your polysaccharides from medicinal mushrooms, those are phytochemicals. You have—there's different organic acids in dandelions that are your phytochemicals. They're the active ingredient, medicinal ingredients. It's something that is not just vitamins and minerals coming from a plant. So, your vitamins and minerals are your basic chemicals in the chemistry of a plant. But then you have your special chemicals that have—give like the medicinal traits of that particular plant, and those are called phytochemicals.

TeriAnn: Are those like the healers of your food that you're ingesting?

Dr. Nuzum: Yes, exactly, exactly. So, you get your nutrients. Those are one thing. But then you have, on the other side, you've got these extraordinary chemicals that are your healers. They're the ones that get you the power punch, if you will.

TeriAnn: What your body needs.

Dr. Nuzum: Right, right.

TeriAnn: To regulate, heal itself, do what it's actually supposed to do.

Dr. Nuzum: Exactly.

Jonathan: Awesome, awesome explanation. Okay, so back to humic.

Dr. Nuzum: Humic.

Jonathan: Humic is accumulation of?

Dr. Nuzum: You've got all of this, in geology, they call it biomass. So, it'd be like a rainforest that's being composted. As it composts, the black ooze that comes out of that would be this humic substance. Now out of that, we would extract humic acid, which is a further concentration of all those substances. Now from humic acid, we take an extract of fulvic acid, which is even a more refined extract of all of those chemicals.

And we're not taking, just taking a component out. What we're taking is the most concentrated of—component. All of those nutrients from the rainforest, all of the different chemistry and all the different nutrients and phytochemicals that we just talked about, all of those concentrated down into the most concentrated source. The most concentrated source of all of those nutrients is fulvic acid. But we have to extract that from the even less compact humic acid.

Jonathan: And making sure the clarity is fulvic, with a V. A lot of people hear folic, or have something associated with that.

Dr. Nuzum: Yes.

Jonathan: We're not talking about folic acid.

Dr. Nuzum: That's the B vitamin.

Jonathan: Exactly. We're talking about fulvic acid.

Dr. Nuzum: Fulvic, from the ground. And fulvic, standard fulvic extracts will have about 60 receptor sites that you can plug other nutrients into. So, when you take a whole food supplement, let's say we take an organic, sprouted, fermented whole food supplement and we plug it into this fulvic acid, and it picks up and it fills up all of its 60 empty receptor sites, different plug-in places for these nutrients, it shrink-wraps that new compound. Fulvic acid is a smaller—it's an angstrom-sized nutrient. So, it's smaller than nano. It takes 1,000 angstroms to make up one nano.

TeriAnn: It's tiny.

Dr. Nuzum: It's tiny.

TeriAnn: Very small.

Dr. Nuzum: We're talking like about 20 angstroms. So, you could fit 50 of them in one nano. So, very, very, very tiny, tiny molecule. And so, when you attach other ingredients to that molecule, it like shrink-wraps them and turns the whole package into something smaller, which makes it easier to pass into your system.

Jonathan: Similar to fermentation in a sense, right?

Dr. Nuzum: Right.

Jonathan: When we're fermenting, it's really shrinking down that molecule and making it so it passes through.

Dr. Nuzum: Your fermentation splits away the extra, the unnecessary components. So, if I had a sculpture here and it's this white piece of paper, but I start chipping away all of the extra components, you actually see the sculpture. I see the—right? And so, that's what fermentation does to the ingredients, is it takes the—gets the waste out of the way. And then what fulvic does it takes that ingredient, shrink-wraps it into a smaller package, and carries it into the system. It's just amazing.

Jonathan: Yeah, I love it.

TeriAnn: Interesting.

Jonathan: We're just talking about bioavailability, to give you kind of—maybe it's not the most pleasant visual but consider your synthetic one a day that you take at the store, and the next time you use the restroom, you'll see a bright yellow urine that comes out. And that's everything that you took just passing through and not being absorbed, right?

But then you take something else that's a whole food, organic, sprouted, inside of a fulvic/humic, and while your urine may be a little bit yellow, because you're not going to get 100 percent absorption, it's not glowing that you get from the synthetics. And that can help you, in a visual aspect, at least in a multivitamin, see how bioavailable is it versus something else, right? And it's probably a very crude way to look at it. But for most people at home that are listening, it's a very real way to see if the supplement you're taking is working or if it's just passing right through you.

So, this was an amazing podcast, and we just kind of—we come in knowing about a subject we want to talk about, and I think by the end, we have six more podcasts that we have to do based on things that you talked about. So, we're going to do another podcast on detox, and we'll do some more on fulvic and humic acid.

We've got a lot of podcasts coming for you. I love this format. I feel like it's going to be a lot easier for our audience to just plug in their headphones and listen while you're walking on the treadmill, or walking around the neighborhood, or driving in your car or whatever. So, thank you guys so much for being on this episode with us.

TeriAnn: Thanks, Doc.

Jonathan: Tune into our next one, we're going to be talking about organic, we're going to talk about why that's important inside of your supplement. We're also going to talk about how to know what supplements you should take and when. So, it's a very important conversation.

You know what? One thing that we did not touch on that we were supposed to touch on in this episode is pharmaceuticals versus nutraceuticals. We're going to save that for another episode. So, thank you everybody for tuning in. Make sure you tune in to our next episode, number three. Thanks, Doc. Thanks, TeriAnn. And we'll see you on the next show.

TeriAnn: Thanks, Doc.