

Dr Mike T Nelson: [00:00:00] Welcome back to the podcast. I'm your host, Dr. Mike T. Nelson. And on the Flex Diet podcast, we talk about all things to increase performance, improve muscle mass, improve body composition, all without destroying your health within a flexible framework. Today on the program, Dr. Jeremy Townsend, and we're talking all about adaptogens primarily, and then we also get into a little bit of micronutrition.

In different ways you can increase your performance in the gym. So we've got three main adaptogens that we talk about that have some pretty decent data behind them. The nice part is they're pretty relatively available and not too expensive either. So that's the, say, the trifecta there. And then we also get into the micronutrients that you may be missing.

And in the Flex question, I asked him [00:01:00] about what does he think are the top nutrients that most people are missing. And I guessed two of them, but one of them I did not guess at all. It was rather surprising. So you can get that exclusive part of the interview if you're already on the daily newsletter.

It'll be sent to you automatically. If not, you're listening to this podcast. You can still get on to the daily newsletter and get that flex four on the top missing nutrients. Just go to the link down below here in this podcast player or on the website or wherever you're at put in your little email and you will get some cool daily emails from me.

You can unsubscribe at any time. We never sell your email and you'll get not only this one. But you'll get all of the past flex for questions. Podcast also brought to you by Tekton. If you're enjoying ketone esters, check them out and they actually taste quite good. So I was using them [00:02:00] yesterday here.

Working on body comp for a couple of weeks. And so I was doing a longer period of fasting. So I did a 17 ish hour fast yesterday, and then I had two of them before training and it definitely seemed to help, which was great. Also helping with just overall performance and even when fasting. It's my friends at Element.

So if you're looking for a great electrolyte supplement that tastes good, that actually paradoxically has a higher sodium, which I find to be beneficial, assuming you're eating mostly real food in your diet, check them out also below. So thank you so much for listening to the podcast and here we go.

Welcome to the podcast. How are you doing today, doc? I'm doing good. How are you doing?

Good. Thank you so much for being here. I got to meet you super briefly and saw your talk at ISSN. Yeah. And I think Let's see, did you do one this year and last year, I think, if I remember correctly?

Jeremy Townsend: Yes, last year I talked about adaptogens.

[00:03:00] This year I believe it was probiotics, so maybe I'm getting mixed up, but yeah.

Dr Mike T Nelson: Yeah, no, that sounds exactly right to me. Do you want to describe a little bit for the listeners what you do? And then we're going to probably chat, initially, I think about, I find adaptogens a very interesting area, and I know you've got some, you're up to date on the newest research in that area too.

Jeremy Townsend: Yeah. Yeah. Thanks. So yes, Dr. Jeremy Townsend. I am the senior research manager at AG1. And I manage clinical trials. A lot of the background support around our claims around other projects that we're working on internally and externally. So I do a lot of research there on a day to day basis.

And I came to AG1 about two years ago from academia. So, I live in Nashville, Tennessee. I was working at Lipscomb University and I was able to build a lab up and we did a lot of dietary supplement, muscle physiology, strength and conditioning type research there. I was there for about seven to eight years.

And before that I got my PhD at the University of Central [00:04:00] Florida did a lot of muscle work and also dietary supplement research, so. Have a lot of like varying interests and a lot of them just tend to stem around how do we improve performance, either mental performance, physical performance, resistance to stress with diet training and supplementation.

So that's like my general interest in intro. And remind me, who

Dr Mike T Nelson: is your advisor at Central Florida?

Jeremy Townsend: It was Dr. Jay Hoffman and Dr. Jeff Stout.

Dr Mike T Nelson: Ah, okay. That's what I thought. Okay, cool. Yeah, so

Jeremy Townsend: you've had Dr. Church on your podcast and we, Same time we were partners in crime, so.

Dr Mike T Nelson: Oh, so that's where you guys knew each other from.

I was wondering about that.

Jeremy Townsend: Yeah,

Dr Mike T Nelson: he's

Jeremy Townsend: a

Dr Mike T Nelson: good guy. Yeah, no he's awesome. He sent me a note that he's in, or then in some talks in Germany now or something. So yeah, that's awesome.

Jeremy Townsend: Yeah,

Dr Mike T Nelson: cool. I always think the topic of adaptogens is pretty interesting. I would say initially it was very dismissive just because even [00:05:00] the working definition is hard to wrap your brain around.

A lot of it just comes from different, a whole, even just different philosophy of how things are viewed. So what would you give us kind of a. Yeah. Definition of an adaptogen and what will be some of the expected effects from it. And we can go into more details after that.

Jeremy Townsend: Yeah. Adaptogens is like an interesting topic because it's actually it's not a new topic.

There's not a new category of research. It's just somewhat newer to like the way that we investigate ingredients or nutrition and like a Western science, like a randomized controlled trial, the traditional. science model that we have in kind of the modern age. But they've been around for a while and I guess I would say I was also pretty skeptical of them at first.

Like I hadn't heard of some of these more novel, phytonutrients or nutrients before. And as I dug into the literature that was available and now it's been rapidly increasing over the past, decade. I realized like there's a lot of really

great data and a lot of really interesting novel nutrients [00:06:00] that I just wasn't aware of.

So, and I also thought the term adaptogens was kind of hokey. It was like, what does it mean? It just

Dr Mike T Nelson: sounds like, it's like, ah, it just makes stuff better. I'm like, Oh, okay. That sounds cool.

Jeremy Townsend: Yep. So, and it's like this umbrella term. So like, there's also different types of adaptogens. So I usually define adaptogens as just herbs, roots, or just phytonutrients in general.

that help our bodies manage stress or bring our body back to balance after a stressful situation. So it really just helps you improve your resiliency to stress. Some of them are more stimulatory. They have more of like an excitatory energy type, energizing type effect. And some just work through other mechanisms that really just allow you to.

Be able to withstand a higher amount of oxidative stress or exercise capacity or whatnot. So they're interesting category. And it's really exciting time that like the research in this area is really expanding very rapidly. So it makes my day to day job exciting. Cause I get to be, at the cutting edge of that research and pretty regularly.

Dr Mike T Nelson: What would be some [00:07:00] adaptogens for, we'll start with just sports performance, because I feel like that's probably. One of the easier things to measure, right? You do the old classic, randomized, double blind, placebo controlled trial. You put them on a rower, you measure reps, or you do some type of output based thing, and you're like, cool!

Did the supplement, help you with your output? Would you agree with that sort of setup? And then what kind of adaptogens would you put in that area that have some pretty efficacious data behind them?

Jeremy Townsend: Yeah. Good point. And so I think if I was going to have three adaptogens that have like the most, from my perspective, at least the most data around exercise and performance there's other ones that are really popular now, but like the three that have the most like data on exercise are rhodiola rosea ashwagandha and eleuthero.

And those three, I think have probably some of the strongest data. Eleuthero has Data. It's a little bit more mixed. We actually have more exercise studies that go a little bit [00:08:00] longer, a little bit further back into the nineties and eighties. And that's just a little bit mixed results depending on what parameter that you're looking at.

But especially in the recent years, a lot of data around rhodiola and exercise performance and ashwagandha have been coming out both with endurance exercise. And with resistance exercise now showing some pretty positive effects. Now, it's still early as far as some of these exercise interventions go, but the data is fairly promising right now.

I know that Dr. Grant Tinsley just recently published a a systematic review on some of these adaptogens. I think it was on rhodiola. Rhodiola,

Dr Mike T Nelson: I think. Right.

Jeremy Townsend: Rhodiola. Yeah. And and also said some similar, same things, like some really great data, it's still early in this realm, but it'd be interesting to see, as we start compiling a lot of different types of exercise, a lot of different types of physiological demands, like where specifically we might be able to see the most benefit, but some pretty good data so far.

Dr Mike T Nelson: And then Rhodiola, I believe there was an interesting [00:09:00] dose effect where more wasn't really always necessarily better. And the second follow up to that is, what do you look for in a product? Because herbs are notorious, in my experience, for We'll just say very low on the quality chain sometimes.

Jeremy Townsend: Yes, it's interesting. There was a study that came out, I believe it was I had the name, I had the PI in my head, but I can't remember it showing like, a very high dose of rhodiola. It was like close to I think it was like a thousand milligrams, I believe. High for rhodiol at least. And it showed a actually that where they actually, I think performed less reps at the higher dose.

And the idea was that it may have been a little bit over excitatory because it's like stimulating adaptogen. We see that like at lower doses. For endurance exercise. At least you see a lowering of perception of fatigue. They can cycle for a longer period of time cycle at a higher work rate.

Even with some repeated [00:10:00] sprint type exercise, you see some positive benefits. But for some reason, at least in this one study, it could have been a one

off, but with that higher dose of rhodiola, maybe could have been over excitatory for some individuals. You bring up a good point. Like we now know there's evidence for these adaptogens, but like we still don't know like the sweet spot for some of these.

Like ashwagandha, for example some people, there have been some reports of people having issues with ashwagandha, but that's also, they're taking it like 10 grams of it. Something some large dose. that like no one now is recommending you to take and they see some potential adverse events, but they're not even necessarily clear if they or if it's actually harmful.

But when we see these lower doses of adaptogens, we see some really positive kind of consistent benefits for stress and performance. So. When you're choosing an herb it's a really good point because there's a lot of suppliers out there. There's a lot of different nuanced differences in some of the herbs that you'll get.

There's two kind of schools of thought. If you go back for [00:11:00] the adaptogens, if you go back to where they came out of traditional Chinese medicine, Ayurvedic medicine. As these herbs have been used for, centuries for various, health benefits or to treat different issues.

And there's a school of thought that you want to have like the full spectrum of the plant. So instead of only getting one small constituent or metabolite or one small component of the plant or one final nutrient. You want to consume something that gives you like the full range of nutrients and phytonutrients from the plant.

Now that's one school of thought is like eat this, but yeah, get the spectrum of benefits. But probably where most companies and most most researchers will suggest now is that usually these adaptogens are standardized. To what they believe is the most active component. So like for, rhodiola rosea, it's the solidicides for ashwagandha, it's with analytes.

And that's because they believe that this one [00:12:00] component of it through animal work and preclinical work, they believe that this is probably the prime mover for the benefits. But we also don't necessarily have data saying. That's the only thing that's the only constituent of the plant that's actually providing the benefit there may really be a benefit from having the full spectrum, but that's, you'll generally see like ashwagandha standardized like 5%.

With analytes or like, or rhodiola is about two to 3 percent cylindricides. If you're looking at a label or looking for these adaptogens, that's generally what you'll see as a differentiator between the brands is that standardization.

Dr Mike T Nelson: And I assume that's something you want to look for.

On the labels, you have somewhat of an idea of quality and obviously do they follow, good GMP practice is probably more of a name brand that has, we'll say a better reputation to lose versus some brand you've never heard of and was on sale for. 80 percent off or something. Yeah.

Jeremy Townsend: That's even [00:13:00] before, I was on bias because I worked for, I work at a supplement company now, and I see a lot of the rigor that goes into like what we do to test our product to make sure that it's high quality and that it doesn't have contaminants and whatnot.

But even before when I was at Lipscomb university and even when I was teaching as a graduate assistant. I taught a dietary supplements class and it was like, pick a, you don't always have to pick the biggest brand out there, but if you pick larger brands, more well known brands, reputation, they have a lot more to lose from giving you a crappy, supplement or something that's actually going to harm you.

Then somebody, buying something off Amazon, right? So I always just tell people, you don't have, I would give them some brands to suggest if you're picking a large brand, they have a whole lot to they have a reputation to uphold and they have a lot of eyes on them. If they put something out that's lower quality or has a contaminant, and that's a pretty good rule of thumb.

Still, I think just now seeing the other side of the industry and knowing all that goes into truly making something of a high quality and safe. [00:14:00]

Dr Mike T Nelson: And I think with Rodeola, I think, I can't remember the name of this company, but I think there's a company even at ISSN that was talking about doing of the main active ingredient doing, I think doing like a fermentation process or another way to produce just the main active ingredient.

I don't know if you saw that, or do you think in the future there may be this split where you've got, like you said, the whole class that says, Hey, we standardize it, but we're. Still using the whole herb because we think these other minor components, even though there's less research might be useful versus the whole

arm of let's try to just highly purify this one component and maybe even make it in a completely different manufacturing way.

Because if this is the main active component, the argument there is we can scale it up. It becomes more cost affordable for companies and consumers.

Jeremy Townsend: Yeah. I think that's. always going to be an approach that companies are taking with everything, not just, not just with adaptogens, but you'll see like, vitamin C has been around forever, but coming up with new ways [00:15:00] to maybe improve bioavailability.

Or have it more accessible in certain formats, like a bar or ready to drink or something. So across the board in a supplement company, everybody's looking to differentiate. And sometimes it's true, like innovation and differentiation. And sometimes it's like a. It's a story that sounds good.

And so I think that's a cool story. And it's novel. Yeah. People are always going to do that. And you know what? And sometimes consumers like the novel story around how something's made or maybe it's more sustainable too. So I think I'm of the thought process that we just need a lot more data on the, this group of this group of supplements.

Because I do think there's probably value to having the whole herb but also maybe more targeted therapies. Maybe they go like a, the drug route or something by having a a more purified, novel form. It'll be interesting to see where this industry goes, because it's exploded in the past decade or so, where no one heard, no one really talked about these about 10 years ago.

And now we're, you're seeing them [00:16:00] pop up in a lot of different products.

Dr Mike T Nelson: With rhodiola specifically, what is in your opinion, the best common dose? And I believe it would be taken mostly 40 60 minutes before training then, is that correct?

Jeremy Townsend: It depends. So I think for Oola there's a wide spectrum of studies.

So wide range of dosage, dosages. The ones the early studies, some of 'em just even only gave 50 milligrams. But the idea is that they gave it for such a long time. It was more to help resiliency of stress over kind of a longer. period of time, like cadets and military training, or there's some studies with around 170

milligrams for other types of populations just looking for kind of the stress resilience.

But a lot of the exercise studies where they give it to athletes or exercisers in an acute fashion get a little bit higher doses, generally around, 200 to 300, 200, 300, [00:17:00] 400 range. And see some benefit. So I think there's probably, even if you're taking a little bit a day, you can get some benefit from that.

But it seems like the exercise, sports studies tend to be in that, 200 to 500 ish kind of range with no real difference in benefit by being scaled down to like 200 milligrams or being scaled up to like five 50 or something like that. So it's that sweet spot it seems like.

Dr Mike T Nelson: Very cool. Is there any real truth to the argument that, and I don't know if this is like a xenohormetic effect that plants that kind of grew up in a more harsh environment may have more of these beneficial botanicals, micronutrients, et cetera. We do see this in nature, right? You see this in wine production from how the grapes are stressed, produce different compounds to coffee, to cannabis, to all sorts of things.

Do you? Do you think that has any sort of [00:18:00] Valid thoughts behind it in terms of herbs, or are we still back to, Eh, this is the main ingredient. It's there. We're probably good enough for what we have for the effects from it.

Jeremy Townsend: Yeah, that's a really good good question. I don't know the answer to it, really.

I've seen

Dr Mike T Nelson: very little research on it, so I'm like, I have no idea. Sounds like a cool story, though.

Jeremy Townsend: I know the story behind rhodiola is that it's grown in like these high altitudes. Right. Mountain type spaces, but I've never really thought about comparing like, what if it's not grown there or what if it is, or is it because it's grown there that gives it this property is, I think that's really interesting is probably outside of my my expertise, but be interesting to see like some agricultural studies or just sourcing comparisons depending on how these plants are grown.

It's an interesting question, but I don't know. Yeah.

Dr Mike T Nelson: Yeah, that's one thing I wonder because the argument there is that it's it might be a way of getting information about your environment through your food, right? So if you're detecting these other small amount of these [00:19:00] components, it's telling you that, hey, maybe these are beneficial for you.

Maybe this helps you because the environment is very harsh and it's signaling your body to. You know have better adaptations versus You know the plant is a plant, carrot is a carrot It's gonna have certain compounds in it or else it's not a carrot and it's not gonna grow So it's maybe a minor argument, but I don't know it always sounds interesting and I think for consumers to have that more novelty of our herb is only grown on the, Northwestern sides of the mountains in Siberia, Russia, or, whatever.

It makes it sound cooler.

Jeremy Townsend: Yeah. It's like, it's like, it gives me the Rocky four vibes or something. Yeah. Like, yeah, he's training in the mountains. This is where he's taking some rodeo off the side of the mountain or something, but

Dr Mike T Nelson: yeah,

Jeremy Townsend: I think it's a cool story. It makes sense. And I wonder if, Even if it, considering the plant originated at higher, out to stressful environments, does it matter when you start, you take it and split it somewhere else?

I don't know. We do know that [00:20:00] like our crops in general have changed and like nutrient content over the decades, just from farming practices and in soil enrichment. And so it would make sense that removing the plant from its natural habitat over time would diminish. That's probably why you need to have other.

Methods like fermentation or something to make sure you're It's going to maintain those active components over, in the decades since it's been removed it's an interesting topic and I, it'd be cool to see if someone is able to figure out a way to really, in a controlled way, research that and to see if it's actually, there's some truth to it.

Dr Mike T Nelson: Yeah. I think it'd be an interesting research study, because it's, yeah, no, not all cool stories make sense. Either. So it's yeah.

Jeremy Townsend: Yeah, but you're right. You do see like the stories come up of the sourcing stories and sometimes they're legit. And like, they, it does make a huge difference depending on where you're sourcing, where it's grown and the environment and some, and for some constituents or some for some [00:21:00] ingredients, that story is a story.

So, it would be neat to see that you have some data on that come out.

Dr Mike T Nelson: Yeah. And in the past, this is probably going back by dating myself now, 15 years ago, I can't remember what the herb was. I'll think of it, but it was for supposedly for fat loss. It never really panned out, but it was like super sexy.

And there was only like a couple of locations where you could grow it. And all of a sudden, every kind of I'd say lower level supplement company on the face of the planet had it in their product. And if you talk to people who were testing the legit supply, they would be the first to tell you that.

There's none left. Like there was this initial run, like it, we don't have manufacturing for it. Like there was no industry set up around it, but yet you can still find it in a lot of, I'd say shadier products for sure for. Many years after

Jeremy Townsend: that's like something I've come to realize as well as like there's some ingredients that are really high quality [00:22:00] or they are they are differentiated, but there's, it's a hard to source them consistently.

Right. And that's why I can see now that I see behind the curtain, I can see other companies like understand maybe why, Oh, I don't understand why maybe they didn't put that in a product because. It might be a great ingredient, but how are they going to sell it to the, however, millions of users or subscribers or whatever, whoever it is they have but I realized the sourcing can be a real challenge at sometimes for depending on what ingredient you want.

There's been some ingredients I've been really interested in, and it's just just difficult to find. And then the lower quality ones. It's like, it's suspect, you're not really sure if it's gonna, it's going to be worth it. So, that's the side of the industry that it's it's really interesting and it's a, another strategy of how are you going to scale it after you find this novel ingredient.

Dr Mike T Nelson: Yeah. And even just the sheer. economics of it. Like I've done some formulations and I always start out with what I call the pie in the sky formulation of like, if cost is no issue, sourcing is no [00:23:00] issue, there's no

issues whatsoever. And any of these constrictions, what do you want in it? And usually the easiest one then is just to figure out by just, your cops, like cost of products sold.

Ooh, we'd like to have this ingredient and we can get it. It's patented. It's reliable. Oh boy. That's going to drive up our costs by X amount and that ingredient is going to for the benefit, the cost, benefit ratio isn't there. So you're always playing with what is your price point. You may have an amazing product, but it's so expensive.

No one can afford to buy it. So now you don't have a business. Now you're not selling anything.

Jeremy Townsend: And I think that other Side of that too, is that now for adaptogens specifically before there's only, a few, large names of certain things that everyone knows, just because it's not, we can use KSM, for Ashwagandha product, but now that's, was the only one that people are really aware of, but they're not really aware that there's a lot of other companies that have high quality Ashwagandha too.

And so, that's also also neat because [00:24:00] it's not, it's much more competitive on that side and you can make some of these formulations more accessible that are really the pie in the sky formulations because you have more high quality options to choose from. So I'm not necessarily on the supply chain side of what we do.

But I know that it's complicated working through it. I just get to do the fun stuff and learn about new ingredients and plan research studies and. Try to figure out what the best would be.

Dr Mike T Nelson: What are some of the benefits of Ashwagandha? You talked about stress resilience, and I typically I've used it with clients to get more in the evening.

My thought process is trying to help them better down regulate, get them ready for sleep. And again, in my anecdotal experience, some clients absolutely love it. They're like, Oh my God, that was like the best thing ever. And other clients are like, eh. I don't know, I can't really tell the difference, which is interesting.

But again, that's anecdotal, it's across a wide swath of people with completely different things they're dealing with too.

Jeremy Townsend: Yeah Ashwagandha is interesting because there's a lot of like, rhodiola is more like a, [00:25:00] from my perspective, it's like stimulating cognition, physical performance.

Ashwagandha has a lot of benefits. There's, Tim Ziegenfuss has been publishing for a while on Ashwagandha and showing, some beneficial effects with resistance training and other modes of exercise. There's emerging data with Ashwagandha for sleep which I was, I was thinking of it for a decade or so, just as a muscle building test.

If people said it had testosterone boosting capabilities. And then as I looked at the data, I'm like, wow, there's, there is some longevity and cognition benefits, but also it's a pretty, it's pretty good data on sleep, which I didn't realize. And so I think that's like a Swiss army knife. It depends on what you're looking for.

If you're looking for kind of hormonal support, or if you're looking for kind of resiliency stress. True exercise performance or just helping with relaxation, be able to improve sleep quality. I think that's one of those versatile ones that depending on what your need, it can potentially help you in those areas.

Dr Mike T Nelson: Do you think in the future there'll be [00:26:00] a way, I'm sure there probably will be at some point, but maybe it'll be here sooner than we think of almost like trying to do a needs assessment of. And I do this with clients now. It's like, Hey, you're having a hard time with sleep. Let's try you down, regulate.

Let's try to have some breathing. Maybe we use a supplement like magnesium, ashwagandha, that type of thing. But even within that, do you think there'll be a way in the future to try to determine what people are more likely to respond, maybe there's some genetic interaction, maybe there's an age interaction, maybe it's better for endurance athletes and strength athletes, or it seems like each year we're getting.

closer to being more defined with what's going to be beneficial for certain populations.

Jeremy Townsend: Oh yeah, even in the past three years since I've been going more deep down the adaptogen rabbit hole and learning more about them like there's been a lot more data coming out just showing a more wider range of benefits.

So I think that's really interesting as far as personalizing supplementation recommendations for people. I think we need a lot more data. [00:27:00] On these ingredients. But I think it would be interesting to figure out. Maybe it's just figuring out a little bit more of using metabolomics, figure out like what metabolites are being produced and then what pathways in the body are those acting on as we do like more sophisticated research on deposits, I think we'll be able to understand.

A little bit more how to, tailor a regimen for a specific issue or ailment or, body size, whatnot, even now, like I, some of the rhodiola studies are dosed based off of weight and some of them are just a single dose. And I think that's still like the simplest thing in the industry or in supplement research.

But, we need a lot more data on, like, do on relative dosing in general, across the board. Plus we need a lot more data on females, too. So I think we just need a larger data set to start building out those, like, prediction models to who would benefit from this the most.

Dr Mike T Nelson: Definitely.

And are there different types of Ashwagandha that might be beneficial for [00:28:00] different slight use indications? Or is it just eh, there's not really that much difference, it's the same thing, and don't worry about it.

Jeremy Townsend: Yeah. So you say like, is there like this type of ashwagandha that's better for sleep and this type of yeah,

Yeah.

In my understanding and view of literature, it's not, it's the same. Like I say, I think the good a good example is sometimes people have different forms of magnesium. They say are a little bit better for different ailments. But in, in my understanding of literature that it's right now, it's really just comparison of the different standardization forms versus raw herb.

Yeah. And I don't think we necessarily have different forms of these adaptogens that are like better for sleep. So like, often the exact same, ingredient and patented, Ashwagandha is the one that will benefit sleep. It will also benefit kind of the resiliency to stress. So I don't think we have those nuanced differences quite yet.

Dr Mike T Nelson: Yeah, because it always seems like supplements. Field in [00:29:00] general is always looking for some small angle to help with promotion. And sometimes there is differences and sometimes it's like, eh, those differences might be just attributed to what you're trying to do. And maybe an individual difference, not necessarily that this particular supplement is all that different, even though, like you said, you'll have people that really liked it for sleep.

And other people liked it better for stress tolerance, with especially the adaptogens, I've noticed that's. Could be entirely possible. And it's just, it's the same herb in both cases.

Jeremy Townsend: Yeah. And that there may be some reality to like there's some differences in forms and that it works in different pathways, but yeah, I think right now it can be, there are some examples out there in the industry where like the different forms do seem to have a.

Preferred benefit for a certain domain, like, magnesium, there's a newer form called magnesium L three and eight that I've said to cross the blimp is, there's some preclinical data showing it crosses the blood brain barrier. It might be better for cognition and [00:30:00] sleep. Whereas some other ones may be better for other domains.

And so it'd be interesting to see, but like back to the kind of innovation, if people are figuring out a way to engineer. Or isolate other components that herbs maybe that kind of work on certain pathways be interesting in the future. I'm sure somebody is going to figure out a way to target therapies or or come up with that next innovation in this area since it's exploding already.

Dr Mike T Nelson: Yeah. And the last one you talked about for adaptogens is a type of ginseng, which I mean, I remember reading about supplements, Scott, back in mid nineties, I think about different types of ginseng and supposedly this type gives you better energy and this is better for recovery. And I just had this question literally the other day from a client about one of my certs in Korea, he was asking about red ginseng.

So he said, it's like everywhere here and it's the greatest thing ever. And my take on it is. There's some interesting data, but I've had a very hard time trying to parse out [00:31:00] any of it, to be honest. It looks like some is beneficial, some is not. A lot of it was, in my opinion, not the best studies done by, companies, and it showed it to be the greatest thing ever.

But if you look at the raw data, I wasn't impressed, and I don't know, it just seems to be all across the map.

Jeremy Townsend: Yeah the ginseng is one that's been, yeah, it's been around for a while. And, I had mentioned a Luthero has data on in athletes and that's what you call it a Luthero, or they call it Siberian ginseng.

And so like, I think for for, sorry, I'm losing my train of thought here for a second, but the data is mixed out there. And it's like, I remember being a kid in the nineties and like taking ginseng and he's in the ginseng commercials. So I think the data is just mixed and I agree. There's just not quite a bit of, there's not really some strong, clear signal for benefit.

And so that's the one that has the research, but. It may be better for, it may just have hasn't been we haven't found the right study design to investigate it with [00:32:00] certain types of athletes, so there might be some benefit, the data is just a little bit more mixed around there.

Dr Mike T Nelson: Yeah.

And I had James Laval on here too, and he has a specific type of ginseng extract, liposomal delivery and he's shown some benefits with that. So you're back to, well, maybe there is some subcomponents that are beneficial. But maybe it's a bioavailability issue. And if we get around that, then maybe we'll see, some benefit too, which adds a whole nother layer of complexity to it.

Jeremy Townsend: And that's another thing, like sometimes these, like some newer adaptations, we don't necessarily have data as much data on, like we don't really know how bioavailability is like where, the time course of uptake, a lot of other things that if. If researchers can see or in product developers and scientists can figure out ways to maybe improve the delivery or like, yeah, like liposomal forms, maybe some of these adaptations that we thought didn't have strong data.

Now all of a sudden seem to be pretty effective [00:33:00] or vice versa, because you can always, if you tinker with something, you can always make it less effective as well.

Dr Mike T Nelson: Oh, sure. You can screw it up.

Jeremy Townsend: Yeah. It was also interesting. And I, that we, I know it's a booming area, we don't necessarily need to get too deep into it, but there's also like the the fermentation of it in your gut.

It might also just create other beneficial metabolites in the gut that it's not necessarily the phytonutrient circling, phytonutrient directly causing that benefit. It's like an indirect. Benefit through a kind of that gut, the gut metabolism as well. So microbial metabolism. So I think this is like a cool, really interesting area.

That's just there's so much, everyone's going light speed trying to get the next, next best thing or just improve the ones you already have data on. But that's interesting. I haven't heard of like the new forms, delivery forms of like the ginseng. But yeah,

Dr Mike T Nelson: yeah. And I think the next generation of supplements.

You're gonna see a ton of, my guess, gut interaction, and then pairing it [00:34:00] with, Oh, you want this pre workout adaptogen whiz bang 4000, you take it with this probiotic to make sure you've got the little buggers in your gut in order to convert it, because you might not, and that explains some of the Responders and non responders and yeah, just a whole next level of complexity at the same time too, but fascinating.

Jeremy Townsend: Yeah. We learned so much about how like microbial metabolism actually allows your body to utilize a lot of the things you take in. And so there's just so many different areas, angles you can come at it to improve, the usefulness of even just the vitamins and minerals you consume or something more complex, like an adaptogen herb it's really interesting stuff.

Dr Mike T Nelson: Yeah, no, that's fascinating. Would you consider, like, Shilaj adaptogen? It seems like that's one of those that God, when did I first start using that? Maybe, I actually got this from Kyle Dietz, God, 15, 17 years ago, and the only thing I could find was some very [00:35:00] poorly translated Russian research, and I got the old school, it looked like just tar you had to put in hot water, it tasted god awful horrible, would just turn to a complete blob of resin, was a pain in the butt to use.

It seemed like there was some benefit, but I, anecdotal, I don't know. And now it seems like it's showing up like everywhere.

Jeremy Townsend: Yeah. I think that's another one that's gained some popularity. I believe the first time I heard of it was at that ISN one year and saw a presentation on it.

So I know there's some good things. There was,

Dr Mike T Nelson: yeah. Yeah, I know

Jeremy Townsend: there's some good data out there on it. I haven't gone as deep into that area quite yet, but I think I would consider that as an adaptogen as well. And I believe the data around it was around um, working on the endocrine, neuroendocrine system, I believe.

And it seemed like it was pretty promising. So, what have you ever been, what has been your experience on it?

Dr Mike T Nelson: Some of, if I remember right, the early Russian stuff was more on oxygen transfer, that type of thing, [00:36:00] which, could be from some neuroendocrine effects, that type of thing.

I had a very hard time trying to make out any of that research. Some of the newer stuff I think does point to probably more of a Neuroendocrine interaction. And I think the other key part too, is that there's actual like capsules of it. There's a standardized process for it. There's, at least I know of one company and probably two or three potential companies that are making it.

And so I think once you cross those barriers, then it becomes easier for other companies to put it into their product or make a standalone product that doesn't taste like just coal tar or does this really horrible taste to it. It makes it more. Useful to other companies and consumers at that point too.

Jeremy Townsend: Yeah. And yeah, I, and I not aware of the more earlier studies, but yeah, I think that's, uh, it's an interesting one. Cause I, I seem to remember it being in some like testosterone boosters or with like long, Being [00:37:00] marketed towards like men's health and aging. So that'd be interesting to see the other companies have a better process for it.

Maybe the data will get better on it as well. I thought it's bad now, but maybe we'll have more standardized approaches to it.

Dr Mike T Nelson: Yeah. Is it just like a

Jeremy Townsend: resin? It's like a, it's like a, it's a pitch tar. Yeah.

Dr Mike T Nelson: Yeah. It's like literally looks like tar. Like the first time I ordered it was from, I can't remember the name of this company, but it was supposedly like one of the super early companies sold it in these little round containers where they would melt it and put it in the container.

And then you had this like metal little stick. You had to go in and like, like scrape it off. And then you could. You could eat it directly, but it would leave it would stay on your teeth for quite a while. It was super, super hard and dense and sticky. You could warm it up a little bit and it was a little bit more pliable.

They're like, oh, you can dissolve it in hot water. And I tried all that stuff. It was just, it was a pain in the butt to deal with. And the longer you kept it the more. Almost like [00:38:00] resin, like it got where it would just turn super hard, like almost like you had to drop it to like shatter little pieces off of it.

So it was real pain in the ass.

Jeremy Townsend: Yeah, I mean it brings up some, sensory concerns as far as how, yeah, how do you? Oh, yeah. Yeah, he Blacked her and then you don't have any friends because your teeth are black, that's hard to sell but

Dr Mike T Nelson: and you're Sticking this thing in your mouth and then you're just putting it back in the thing to get more out of it.

The next day, it's like, Hey,

Jeremy Townsend: what

Dr Mike T Nelson: could go wrong with that?

Jeremy Townsend: The things we do to, to get, to get bigger, faster, stronger.

Dr Mike T Nelson: Yeah. Yeah. Related to that, as we wrap up a little bit, do you want to talk? I think that's an interesting thing of. Micronutrition we're seeing more now and even just stuff that you rule out as simple like just micronutrients Microminerals, one thing i've done now through a separate company is on clients that, may have some stuff going on.

They've their diets, just a floating trash bin fire has been for a while, [00:39:00] just giving them a multivitamin, multi mineral. That's, well formulated at escalating doses. Obviously making sure it's well formulated, it's got the right amount of zinc and copper and you're not going to deplete something out, et cetera.

It's crazy how often that makes just an utterly massive difference. And yes, of course, we're trying to fix their nutrition and get them to eat healthy vegetables and all that kind of stuff. But I just found if you can do something even acutely

to get them that win, where they feel better, and then they can actually start keep transitioning those other healthy lifestyles.

When I first started doing this, Probably nine years ago, I was like, eh, this isn't going to work. Like, what am I doing? This is a waste of money. And shocker, it seemed to help quite a bit. I was like, Oh my gosh, like maybe people are more deficient than I realized at this point.

Jeremy Townsend: Yeah. And it's like, that's something that I I would say if I go back and say, what was I really wrong about, at least initially when I was teaching sport nutrition or on nutrition, was I a lot of the studies showed like when you would take larger doses of certain.

[00:40:00] Micronutrients like vitamin C or something, the data didn't miss a lot, like drastically improve sport performance. So I didn't really talk about them as much. And then you realize that like, when you look at we do dietary calls and athletes are exercising individuals or just a standard American out there, like They're often not getting enough micronutrients.

Almost never across the board, even people who we think are like super healthy and like eat good, eat a good diet still are not even meeting like the low bar for your recommendations. So I think I've reversed my stance on that because I've also experienced like when you're getting that multivitamin daily, like I can notice some significant differences and others have told me differences when they've added.

More of like a vitamin and mineral nutrient support or foundation in addition to changing dietary habits as well. So, yeah, I think it's interesting that we yeah, I think this is an emerging area because people are realizing they're not getting what we thought were these basic hit units in nutrition and then [00:41:00] also some people just You know, have a limitations and the forms they're taking it in the foods that are consuming.

So they're not absorbing it, which kind of goes back to what you were touching before with different forms of adaptogens. That's what we have the liposomal vitamin C and these other improved bioavailable forms Of these micronutrients because people aren't getting them their diet and for a long time.

They're taking like crummy forms of these minerals and didn't see an effect. And we have a more improved form of vitamins and minerals. Like it does seem like it makes a pretty noticeable difference for a lot of population, both in the data, but then also just like an anecdotal evidence from people sharing.

How they added magnesium to their diet and like it changed their life or changed their sleep, changed their energy levels. Then that's one example, but I agree. I think it's circled back to now people are looking back at micronutrients and be like, Oh, this is a simple solution that we've been overlooking for a while.

Dr Mike T Nelson: Do you think there's any truth that if [00:42:00] you have an athlete that's doing more volumes of exercise, that they're probably just going to need more of these for. Simple cofactors because they're just literally burning through more fuel.

Jeremy Townsend: It makes logical sense to me. My guess

Dr Mike T Nelson: is yes. I can't be pointed to any studies, but

Jeremy Townsend: If you're in there's other things you can think about, like oxidative stress, like you're taking in a higher level of carotenoids or you're taking in the other micronutrients that kind of help combat that, that would make sense as well, but just simply.

Well, if you have a few scale up, if you scale up your macronutrient levels, you have to scale up your protein during periods of stress. Why wouldn't you scale up your micronutrients as well with the demands that you're going through? So I used to think the opposite, like, yeah, they're not ergogenic. No big deal.

No. I think this is we scale calories. Endurance athlete can be eating the house, but they may not be eating nutrient dense foods, or they might just be eating the same thing every day to make sure they hit their goals. And they don't realize they're [00:43:00] not looking at their micronutrient intake.

So I, I think those studies are hard to do to figure out like what the nutrient requirement would be at different levels of exercise intensity or demand. But if we can figure out, ways to do that I think we definitely would see something there and probably would alter the way that we would give recommendations to clients and just the general public really.

Dr Mike T Nelson: Yeah, there's one of the more fascinating studies done was after natural disasters, they use a multivitamin, multi mineral, like after the, I think it was the earthquakes in New Zealand and the floods in like North Dakota. And they actually put researchers and probably these poor grad students out in these row boats in North Dakota, and we're giving people the supplement or a placebo.

And the rationale was pretty interesting is that, well, all these people are experiencing the same stressor. Like they may have individual responses and how they deal with it, et cetera. And in both those studies, they did see a benefit, at least in terms of stress tolerance in the [00:44:00] group, getting the actual multivitamin, multi mineral support, which I thought was an interesting and unique way to try to get some data around it in terms of picking a model to look at.

Jeremy Townsend: Yeah. And it's just also just multivitamin, multimineral research is somewhat difficult at times because. There's a lot of different types of. Of, of products out there, different forms, and even like being compressed in a pill. Some people can, digest it and it's pre buy available for others depending on their, their genetic makeup and in their gut situation or just a transit time, they may not actually be getting quite as much out of that as others.

And you can say that about any other form, depending on the individual. It's almost like if there's a more standardized way of even approaching it, we probably be able to detect more outcomes. I think there's lots of data out there to show it can help it with times of stress and other conditions.

But yeah It's basic, it's simple, it's not quite, it's not always as sexy as taking, it's [00:45:00] breaking up black tar and, it doesn't

Dr Mike T Nelson: have a cool story, bro.

Jeremy Townsend: Multivitamins weren't born in the Himalayas. Right. So,

Dr Mike T Nelson: yeah, you see those, all the super foods I've often joked.

It's like to sell a super food, you need it to be like, Handpicked by, a local person from the region with four piranhas stuck to his ass, like under the blue moon of, the third Monday of the week or month or whatever, like it has to be all these like super hyper specific conditions, which interesting.

Jeremy Townsend: And there's there's some that probably that is a huge, there's some ingredients that would be a huge differentiator. There's others that. But like, it may not as well, but it's, it is there's a lot of stories out there around different sourcing that's just interesting.

Dr Mike T Nelson: Well, thank you so much for all your time. We really appreciate it. Yeah, tell us a little bit more about AG1 and where people can find you and all your great info you have all the time. [00:46:00]

Jeremy Townsend: Yeah so my Instagram, is JRTownsendPhD so I guess you can find some of the work we're doing, coming out on there.

I'm not super active on social media, but that might be one place they can get in contact with me. And then our website is drinkage1.com. I'm not on here to promote, that the product, but we are doing a lot of work with research right now that will hopefully be able to talk about both around our product, but also.

We're doing some collaborations with to support science in general. So I'm also excited about more of like general science contributions that we get to talk about here very soon, probably with some of the people that you've had on as well, as far as just some areas around nutrition and nutritional support.

So, yeah, check out dreamkg1.com and There'll be some developing research coming up on the website in the coming months and years as we continue to build out that arm of the organization. So it's exciting time.

Dr Mike T Nelson: Yeah. And that's awesome to see. We're super excited to hear more about that.

And also it's. It's cool to see companies supporting research [00:47:00] and spending the money to do that. Cause as firsthand, it's expensive, it's time consuming. It's hard to justify sometimes to other people in the company or even other companies, like why we should spend money on this versus spend more money on marketing or spend more money on other things.

So it's always very cool to see when companies are doing that because I've been in some of those meetings and that's not always, it's not always an easy thing to just assume they're all going to do. Science, the way we would like it to be done. That doesn't always happen. So,

Jeremy Townsend: yeah, and I guess that bias was a huge differentiator in my opinion.

And that's one thing that's one reason why I was so excited to, leave my professor position, which I really enjoyed come to AG1 because our CSO Ralph Esposito was building out this the scientific arm of the company and. It was really, truly one investing and doing really great science and moving the, our company forward, but also moving the field forward in general.

So, it's been real blessing to work there and it's been unique, as you can say, [00:48:00] very different from what a lot of companies do and a lot of their approaches. So it's been a good experience.

Dr Mike T Nelson: Yeah. Awesome. Well, thank you so much. We'll make sure to have all the links there down below and thank you so much for your time today.

We really appreciate it. Awesome. Thanks Mike. Thank you.

thank you so much for listening to the podcast. Really appreciate it. Big thanks to Dr. Jeremy Townsend for being on the program and all the wonderful stuff he is doing over there at EG one. You can check them out below and all the great research he talked about, and if you want to hear his top nutrients that most people are probably deficient in, you can click on little link there below for the Flex four.

And it'll be emailed directly to you. If you're already on the Insider Newsletter list, then you will get that automatically as a cool gift and a thank you for being on the Daily Newsletter list. If you enjoyed this content, you can sign up there below. Also, huge thanks to LM& T if you're looking for [00:49:00] electrolytes.

I'm drinking the grapefruit one right now, which is one of my new favorites. That and the raspberry are my two favorites. And then if you're looking for ketone esters that taste good, check out my friends over at Tekton. And yes, I am a scientific advisor to them and an ambassador. So, I do make some dinero from that as my disclosure.

So thank you all for listening to the podcast. Really appreciate it. Please give us the old like, subscribe, download, all that wonderful stuff to help us with the old algorithms. And if you have someone who may enjoy this podcast, please share it around or post it on social media, make sure to tag me and I can hop on and say, thank you.

Thank you so much. Really appreciate it. Talk to all of you next week.

Great little actress. Yep, and getting smaller all the time.

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