Your Body’s Power Plants: How Mitochondria Shape Metabolic Health Transcript

(Transcripts are generated by AI and may contain errors)

Podcast Introduction and Mitochondria Overview

Looking ahead, how does protecting the mitochondria, like you said, getting outside and giving the body the right signals, support with supplements and things like that, how does protecting the mitochondria impact longevity, performance, and just being your best self?

Yeah. If we want to know things that we can do to protect our mitochondria, we have to know things that can damage the mitochondria. Fair. How do you stop it?

So we got to think about things like we're bathed in toxins, right? Toxins, EMF exposure, all these things that we're getting constantly exposed to, we have to try to reduce or eliminate our exposure, right?

And obviously we're not going to eliminate it, right? But we can reduce it. We can go to cooking in a stainless steel, cookware, or find a really high quality ceramic.

These are things that we can reduce our exposure to. Try not to put your food in plastic. Your health is shaped by more than symptoms. Through real stories and expert insights, we explore how your genetics, environment, and daily choices affect your wellbeing.

We uncover root causes and share practical tools to help you find the healing you need. Welcome to the Forum Health Integrative Medicine Podcast. Welcome back to the Forum Health Integrative Medicine podcast.

I'm your host, Amanda, and I'm joined with Dr. Drew Elishefsky, a doctor of chiropractic in our Madison Forum Health location. I'm so excited to have you here today.

We were just talking to Emily Rodriguez before this. And today we're going to be talking about mito-metabolics, why your mitochondria hold the key to blood sugar and energy.

Super interesting topic. I'm so excited to dive into this with you today because energy isn't just about coffee or willpower. It's about your mitochondria, the tiny power plants in your cells.

When you're not working right, blood sugars spike, energy crashes, and even long-term health risks follow. Today, we're going to talk about how caring for your mitochondria can help you master blood sugar, feel more energetic, and show up strong for your family.

So, Dr. Drew. Wow. What an intro. How's it going? I love it. Yes. Now, this is exciting. I'm happy to be here. Good. Good. I think this is a topic that really first kind of got my feet wet here in the industry as far as functional medicine goes.

So, this will be fun and I'm super excited. Yeah. So, let's dive into it. Let's get into it. Mitochondria, that's a big word. Yes. What is it? Let's just simplify it.

You know, you just kind of say it's like the powerhouse, right? It's an organelle within the cell. Almost every single cell has a mitochondria, except for red blood cells.

So you can imagine how important that organelle is with overall health, not just blood sugar. So, you know, when something goes wrong with the mitochondria, we start having some mitochondrial dysfunction.

How Mitochondria Affect Energy and Blood Sugar

And I just told you how many, you know, it's almost in every single cell. You can imagine how many different symptoms could arise from that. Not just energy fatigue, but now we talk about blood sugar.

We could talk about digestive symptoms. All these things could be related to mitochondrial dysfunction. Yeah, absolutely. And mitochondria, like you said, it's in every cell and in some cells more, or there's higher concentrations in certain areas, right?

Like our heart cells, our brain cells, they have the highest concentration of mitochondria. So it's so important. It's everywhere. It's in every cell of our body, everywhere in there.

So it's going to affect everything. If you have dysfunction, it's going to affect everything. And we could build more, your muscle, right? So this is another thing, right?

When you work out, you exercise, you can actually create more mitochondria within that muscle. One more reason, go outside and get a walk in, go exercise.

Yeah, resistance training is going to be obviously ideal. Yeah. But yeah, so we can build new mitochondria and more mitochondria, which is awesome. I love that.

Learn something new every day. That's right. That's why I love this. I love this. So blood sugar. Why is it important? What do we need to know about it?

Definitely. You know, at least in my practice, I've just seen, you know, any, almost every single marker improve when you start helping patients regulate blood sugar.

Now, anything from those afternoon crashes, right? Man, after lunch, I just, I just, I can't function as well. I just don't have the energy to get through work.

You know, or I feel like I need a nap in the afternoon. You know, how many people do you hear that? I mean, me, hi. Exactly. Yeah, exactly. It's very kind.

After the crash, I've been going and going and going all day and forget to eat, or I'm just drinking coffee and caffeine, and end of the day, I'm done.

Yeah, so you can see like, okay, now you don't have as much energy, your job maybe, you're not as efficient at your job. You know, blood sugar can impact a lot of different areas of your life.

Brain fog. Yeah, totally. Lots of words, like just everything. Right. Inflammation, like we see when you regulate blood sugar, their inflammation improves.

All these spikes too, we were just talking to Emily about stress before this. And when your blood sugar is all over the map, spiking, dropping up, down, what is it today?

What roller coaster am I riding? Every time that happens signals the stress in the body. So from our previous episode, now we just, we know again, the hidden things for stressors, blood sugar is another one.

Yeah. Well, and I would say even the opposite can be true. Stress can impact blood sugar. Yeah, absolutely. Yeah. They're all interconnected. I love that.

So mitochondria, powerhouse, they are the thing that fuels the cells, makes them go. They're the engine, right? Blood sugar can go up and can go down.

the glucose spikes in the body, how do these two play together? Why are they important? Yeah, well, I would say, you know, what the literature suggests that, you know, what you want to try to avoid is the big spikes and the big crashes, right?

Because that's going to be, have a more impact on your overall health, right? And so we want to make sure when we're talking with, when we're helping our patients, we want to try to help stabilize their butcher first and foremost, okay?

We want this. There's going to be ups and downs. That's supposed to happen too. Let's be clear. We're supposed to have dips and peaks in blood sugar at appropriate times, but also at appropriate levels.

It's the real highs and the real lows that happen. Right. Right. And that's when the glucose is being pumped into the body or it's when insulin is being released to control the blood sugar.

Right. Yeah, so let's put it this way. You know, when we're after a meal, right? Or, you know, first thing in the morning, you know, those are really great times to kind of, you know, look at this.

And when we're thinking about after meal, we're going to get some increase in budget, right? But here's a good thing. We can do things that are very simple to minimize that, right?

The order or sequencing of what way we eat our meals are going to impact that.

Meal Order, Walking, and Blood Sugar Support

So if you eat protein first, then your veggies are fiber, and then a carbohydrate like rice or fruit, it's going to be much less of an impact on your blood sugar than if you do it in reverse, right?

And here's the other thing that is super cool and free. Patients love free, right? I love free. We don't need to necessarily do all these supplementations and stuff like that, although they can be very helpful.

But going for a walk, stretching after your meal. The walk. Right? Those are just simple things that will shuttle the sugar out of your bloodstream into the muscle.

And so that is it. Day one thing that I talk to all my patients that are struggling with blood sugar, this is non-negotiable. Yeah. I love that. It's such a simple thing.

You're already doing it. You're already eating a meal. But if you change the sequence in which you eat your macros, your protein, your carbohydrates, if you change the fiber, if you change that sequence, So simple.

Such a small change for big results. And the walking too. I love this. I do remember a time in my previous life, taking a walk can be equivalent to metformin.

Do you know what study I'm talking about? I don't necessarily know the study, but I could see that because, you know, they're going to be kind of working kind of to a similar degree, getting a sugar out of the bloodstream.

Metformin kind of works on the receptor, kind of like berberine, right? So berberine, metformin, there's always that comparison, right? And I think we should touch on this right now since we're on that topic is supplementation.

Let's just talk about supplementation and we'll dive into that. So early on when we started, when I started doing this, I was lucky enough to find Dr.

Brian Walsh and he's who introduced introduced me to the concept of how mitochondria can affect blood sugar. So imagine this. If you're throwing a house party, right?

And things are kind of getting a little crazy. Yeah. Someone's knocking on the door. Okay. Are you going to let somebody in more people in if you already have a mess to deal with inside the house?

No, the chaos. Probably not, right? No. I don't want the neighbors calling the cops on me. Exactly. So if you have blood sugar issues and you have all that chaos going on with cell inflammation, oxidative stress, all those things,

We got to think that the body is very smart.

It's probably not allowing the blood sugar to come into the cell for a reason. And that's where the insulin resistance come. Because what the cells are saying is like, hey, there's too much going on within the cell.

Let's not create any more chaos by increasing our energy production, which then leads to oxidative stress if we don't have enough oxidants. antioxidant status, right?

So now we've got more inflammation, oxidative stress. The cells are very smart, okay? So you've got to clean up the inside of the cell first so that then the body will do what it's supposed to do, okay?

Okay. So that's where the mitochondrial support from a supplementation standpoint can be super helpful. But if you use berberine, what I've seen, at least in my practice, is that it can actually make triglycerides go up and increase some of these blood sugar symptoms in some people.

Now, in other people, depending on the lab markers, berberine can be helpful, because I know there are going to be some people that are like, well, berberine really helped my blood sugar.

That's the beauty, though, of everybody being unique and also personalized medicine. This applies to the people it applies to. It might not apply to everybody, but that's why you partner with an integrative and a functional medicine practitioner that has this kind of education and knowledge to know, is it the right supplement for you?

I think it's so easy to just go out and be like, oh, here's some support for this. But if you're not being strategic with it, if you don't know the why, or if you're not working with somebody who understands more about this, let's be real, I'm not an expert in medicine, but Dr.

Google can tell me everything that I want to know, or at least I think it can. Right. And it's… And now we got AI and people are interpreting the labs.

Supplementation, Labs, and Personalized Care

And it's great. It's a tool. It is a tool. And patients will come in and say, hey, I already kind of put my labs through this. Yeah. And this is what I'm finding.

But, you know, it's not perfect. No, you still need somebody who has that lens, the real-world experience, and the education to do the fact-checking. You can't do that on your own.

Well, you know, I've ran labs through it to see what AI would recommend for supplementation. standpoint in, you know, it hit on a few things, but then again, it would throw in like the off ones that for a specific patient weren't needed.

So when we always look at labs, we're not just going to look at your fasting insulin or fasting glucose or hemoglobin A1C. Those are nice to have and they can tell us a little bit about it.

But when you, what you really need as well as you need to look at the insulin, you need to look at C-peptide. These are things that will give us kind of a better insight on what to do and how to support the patient, right?

Okay. And so when we're doing it, we're thinking about, let's just say for an example, we're seeing elevated high blood sugar, blasting blood sugar, elevated hemoglobin A1C, and an elevated insulin.

Now we're going to be thinking, hey, this patient needs to clean up the cells, insulin resistance. We're making enough insulin, but we're not getting the sugar into the cell.

That's where things like CoQ10, alpha lipoic acid, carnitine, some of these mitochondrial supports can really lower. And I'm going to give you a real life, real world example here.

I had a patient that was needed to get surgery, but his blood sugar was out of control. So they weren't going to perform surgery until his blood sugar came down.

Now, they put him on, you know, certain things like metformin and other medications, and it wasn't really budget. His A1C was like TET. Okay. All right.

Explain what that means. Is that high? Is that low? That's really high. What do you want? That's really high. That's like diabetic range, right? Okay.

And so you really want optimal levels, which is going to be about 5.0 to 5.3 is optimal. That's what the literature say. If you're above or below, you have an increased chance of all-cause mortality.

Now, I think it's coming down even a little bit further into like the 4.9, 4.8. But at least, you know, that's kind of where I've been. 5.0 to 5.3 is pretty optimal.

Yeah. going back to this individual, now that you know what optimal is, his was like, I believe it was nine or 10, it was up there, right? And in a month, and people are gonna say this is impossible because usually A1C is the past three months of how well you're metabolizing your sugar, but I, hand to God, came down into the sevens in one month.

Now we were doing everything, we were supporting, it wasn't just the supplementation, it was, The lifestyle. The lifestyle, the way we're eating our food, making sure that we're eliminating soda and all these other things, right?

So it was a combination of everything. Supplements only work as hard as you do. Exactly. And that's something that needs to be a clear message. It does.

They're a tool in the toolbox. They're part of the care plan. The practice of medicine that we perform here, it's comprehensive. It's the whole person.

It's the whole care plan, right? Like, this is just a piece of the puzzle, right? And now, you know, what we're even getting even, it's becoming more highlighted in the industry is the CGM.

And it's been out for a long time. But our utilization as a tool for patients to learn, you know, the example I always use… Before we go down there, what's a CGM?

Yep. Continuous glucose monitor. Good point. So continuous glucose monitor helps you track your blood sugar live time. Okay. Okay. And it's a wearable device.

Yes. It goes right into your arm. It's inserted in your arm and it can connect to your phone now. Okay. And we can use this as a tool for patients to see how their food is impacting or how their emotions are impacting their blood sugar, right?

There's more, there's so many things can impact it, right? Stress, like you said. Yeah. Right? Lack of sleep. Sleep. Yeah. You know, when… Or even identifying, like, with sleep, like, if, you know, blood sugar spikes and dips, if you wake up in the middle of the night and you want to go to the fridge for a snack or something like that, you might have had a blood sugar dip or spike in the middle of the night.

Yeah. That woke you up. For sure. And I think, you know, this, when we go back to mitochondrial medicine, you know, also, you know, we have to think about sleep, light and dark, you know, cycles, all these types of things that can influence our mitochondria that we may not think about.

Right. So, for instance, getting outside in the morning when the sun rises is super, super important for your cortisol and your hormones. Absolutely. We live in this kind of world where it's kind of foreign to us.

We wake up, we turn the lights on, this fluorescent light. That's more like noon. That's like telling us it's noon. We

need that gradual sunrise, right?

That's super, super important and allows our biology to know what time of day it is. It also preps us for sunlight throughout the day. Way back when, we didn't have clocks.

We had to go by where the sun was, our body. We didn't have fluorescent lights all day. You know, now we have to think about how blue light is affecting our mitochondria, right?

And every little bit of blue light is going to suppress melatonin. What is melatonin? You know, obviously we all know it's helpful for sleep, but it is very important as an antioxidant for our mitochondria.

It's a supplement that's out there, but it's also something our body produces, right? Like it's a supplement that we take, but our body naturally produces that.

And when we're using things like melatonin, supplements that… already our body produces. That's also something that you should be really meeting with somebody and talking to them about how much when not becoming dependent, not suppressing the body's natural mechanism of action to actually create this for us.

So, you know, partnering with functional and integrative providers and for safety, for efficacy, for, you know, there's just a lot of things that all this stuff is available to people out there and it's, it's But how do you do safe rent?

Exactly. And that's where I think partnership and understanding is so important for patients and providers. If I have a problem with my plumbing, I'm not going to sit there and go on YouTube and try to figure it out.

I'm going to hire somebody to come in and fix my plumbing. Absolutely. It's no different than this, right? And we're not here to replace your primary care.

We're not here to do all that. But what we are here is to support you, be another team member, you know, fill your team out. help you become an advocate of your own health, take charge of your own health.

Because no, I'm not going to hire a plumber to come in, but that plumber is going to give me a plan. And I'm not going to be putting the same stuff in my- Garbage disposal or whatever.

CGMs, Sleep, and Circadian Rhythm

Exactly. I'm not going to be doing the same stuff because now I have a plan of action to keep my plumbing cleared once he gives me the plan. Right? Absolutely.

Yeah. So that's where we can be. We can be an added little piece to that puzzle for you. Yeah, absolutely. So mitochondria, these are the energy engines, right?

They turn food into fuel. If you're sluggish, if you're feeling tired, if you're craving sugar and you're struggling with blood sugar swings, we might be having some mitochondrial dysfunction.

It's really important to look at both your blood sugar and your mitochondria together. And they're super connected. High blood sugar is going to also have an impact on the mitochondria, right?

It's going to damage the mitochondria and weaken them and make blood sugar even harder to control. So it sounds like it's this vicious cycle, right? So you really have to look at both pieces to the puzzle there.

So looking ahead, how does protecting the mitochondria, like you said, you know, getting outside and giving the body the right signals, support with supplements and things like that.

How does protecting the mitochondria impact longevity, performance, and, you know, just being your best self? Yeah. Well, I think, you know, look, if we want to know, you know, things that we can do to protect our

mitochondria, we have to know things that can damage the mitochondria.

Fair. How do you stop it? So yeah. So we got to think about things like we're bathed in toxins, right? Toxins, EMF exposure, all these things that we're getting constantly exposed to, we have to try to reduce or eliminate our exposure, right?

And obviously we're not going to eliminate it, right? But we can reduce it. We can go to cooking in a stainless steel, cookware, or find a really high quality ceramic.

These are things that we can reduce our exposure to. Try not to put your food in plastic. Whole foods, less processed, filtered water, drinking, trying to drink out of glass instead of plastic.

There's so much that's not in our control that I think we think it's really overwhelming. Like I can't do it. Yeah. You know, but there's also- It's little steps, right?

It's small steps, but it's also just acknowledging what you are in control of. Yeah. And the things that you're not in control of, that's why we have the support is to offset what we don't have control over.

Absolutely. So, you know, and then, you know, trying to reduce our EMF exposure, you know, Wi-Fi and these things. Blue light glasses, you know, my husband, so we've been using blue light glasses for years.

So at night, if we're watching TV or something like that, we throw on a pair of blue light glasses. Well, my husband just recently got these. like, next level blue light glasses.

I have to ask him for, but they're super yellow and they, like, remove all of the color. And he's been sleeping like a baby also, by the way. It helps.

And it goes back to not suppressing your melatonin at night, right? When it gets dark out, we need to start winding down. We need to start turning the lights off.

You know, those types of things. It changes from winter to summer, right? And the way we go back to mitochondrial support, and I don't necessarily think it's damaging, but it's definitely not helpful when we're eating, let's just say, a mango in winter, right?

What kind of signal is that sending our body? That's a really high-energy fruit that takes a lot of sun. Our bodies are constantly sensing and feeling the environment.

So if it's winter out and we're eating a mango, that's confusing. It is, yeah. And so we should be eating, depending on your latitude, right?

Reducing Toxins and Supporting Mitochondrial Health

Yeah. Of where you live, you know, being in Wisconsin, probably shouldn't be eating a lot of fruit and those types of things in winter, right? Yeah. Because it's going to be changed.

It's seasonal chefs. It's more like of the grounding foods. It's winter that is like more of the grounding. Like the tubers. The meat on your bones. Yeah.

Comforting foods where summer or spring is starting to get into the light, the fresh, like the farmer's markets. Yes. Right? Like. Growth. Yeah. Right?

Yep. And then the winter, it's going to be more of like fasting benefits, those types of things, right? Benefits of cleaning up all the senescent cells and the cells that aren't working well, right?

Okay. What's a senescent cell? It's still like a zombie cell, right? Something that we need to kind of manage. Yeah.

So zombie cells being cells that They're working right.

Yeah. They're just kind of out there like, they're there and they're causing chaos and they're still reproducing also, but they're creating more zombie selves.

No, I like that. I want to see it. Yeah. There we go. I'm a zombie. So yeah. Perfect. Thank you. But yeah, you got to clean it up. You got to stop what you can, right?

So that the degradation and the mitochondria can at least stop getting the negative signals. And that's like step one. So step one is remove what you can.

to lessen the damage to the mitochondria. Infection, you know, chronic infections, this is where like we can look at the gut, there's the candida, the chronic infections like Lyme, all those things can impact, you know, as well.

So nutrient deficiencies can, you know, create chaos as well. So these are all things you got to look at and that can be helpful for blood sugar, but also the mitochondria.

Yeah, yeah. Yeah. Do you think that when people are working on their mitochondrial health, do you think it's possible to reverse fatigue, brain fog, or like the energy crashes and stuff like that?

Well, we know it's possible because we do that, right? And we just have to kind of, you know, even like I like the term mitochondria because you're talking about mitochondria because it has such a big impact.

But if we just say cellular health, right? Cellular health. This is kind of where we really focus because it's encompassing things like blood sugar, nutrient intake, metabolic flexibility.

And then we have this, and that's all like all the nutrients that we need for a healthy cell. And then we have things that will damage our cells. So, you know, your toxins, your infections, you know, that can be viral, whatever.

And then we have things that we communicate. That's where hormones. And so our clinic is primarily focused on hormones. And that's what we do really, really well.

And reversing fatigue, sometimes by just giving a guy or, you know, a male, a little bit of testosterone, that because they were deficient, right? And that, they're like, oh my gosh, I have so much motivation and energy.

But yeah, even just supporting the mitochondria, of course we see that. Yeah, yeah, absolutely. And it's reversible. I love that. I think that's the hope that everybody needs to know is that it's a journey, it's a process, and everybody's looks a little bit different and unique, but with the right plan and the right partner in your health and journey, you can get back to where you want to be.

Yeah. Better, I would say. Yeah, of course. And I think that's really important. So Drew, I have really enjoyed this and I can't wait to get you back on and dig more into this because I know you're doing some really cool stuff in Madison right now.

You are about to launch. some really great programs that really attack the mitochondria and the blood sugar connection like head on for people in a really actionable way.

And I'm so excited to dig into that further with you when that's here, and I know it's right around the corner, so I'm so excited to get you back on here for that.

Looking ahead, if somebody wanted to get a hold of you, to start having that conversation with you, how do they find you? Yeah, I mean, first, let's, you know, going on to Forum Health's, Madison's website, right?

and booking appointments. I think that's the best way to start your journey, your health journey. I love that. And, you know, for people that haven't been in this space or, like, kind of worry, I think it's important also just kind of, you

know, what does that process look like, right?

Like, our first appointment is just me getting to know you, understand and look at your health history.

Cellular Health, Hormones, and When to Seek Help

You go through your cell blueprint questionnaire that we fill out to help us identify where we need to go with your testing. We get some testing if needed.

And then we start implementing a plan based off of your history, your cell blueprints, and labs typically. And that's kind of like, you know, generally what that looks like.

What would a person be experiencing to say, I should go and see Drew? Well, you know, there's many different things that people come in to me for, but I would say, you know, if you're having a hard time managing your blood sugar, let's say you've worked with other, your primary care and you've been put on some medication and you're still not, you know, still having those ups and downs or just still not being able to manage your…

Little bit on the pre-diabetic side. Pre-diabetic. Yeah, or diabetic range, you know, hemoglobin A1C. Let's just say it's not coming down or you're still having those crashes.

I would say that's a really, you know, good sign that we need to look further, especially if you're already on medication that's not working. Yeah. Let's try a different approach.

Yeah, I love that. I think it's important to know you know, if you've got energy, if you're struggling with brain fog and fatigue, if you're not sure if it's your blood sugar or not, if you think if you're not sure it's your mitochondria or your hormones too, because people can work on all this with you, right?

For sure. It's not just the mitochondria and the blood sugar, but you're going to look at the whole person because the whole person, the hormones off balance, the thyroid off balance, if all that stuff is off balance, It's got to be part of the plan because you're treating the whole person, right?

Totally. And, you know, it's good to get the baseline and measure that because a lot of time if you fix blood sugar, your testosterone might come up. And I think that testing and retesting is so important.

It's validating for us as providers. Well, I'm not a provider, but it's validating for us, but it's also validating for our patients to see. It's like, yeah, of course I feel great.

Like, that is the first and foremost. Like, labs are great, but it's all about how you feel, right? But it's also so validating, too, to see those numbers come back and vitamin Ds in the optimal 70 to 80 range.

And so it's just, it's great to see it also. It's very satisfying getting patients better. It is. It is. It's one of the best feelings in the world. Yeah.

That's why we're here, right? I am so happy that we got to talk today. Thank you so much. I can't wait to have you back on our podcast. Stay tuned for next week's episode.

Thank you. Thank you for joining us on the Forum Health Integrative Medicine podcast. Each episode, we help you understand your health from every angle and inspire your lifelong wellness journey.

Follow the show, share it with someone who needs hope, leave a review, and take the next step toward feeling your best at forumhealth.com.