Introduction to Melatonin and Brain Aging

Welcome back to the Heal Your Brain Masterclass. I'm your host, Doctor David Jockers, and today I'm interviewing Deanna Minich. And we're talking about how to optimize melatonin levels and promote healthy brain aging.

Deanna is the bestselling author of The Rainbow Diet. And she's and also a book called Quantum Healing. That's really good. Deanna is a certified functional medicine practitioner and nutrition scientist, international lecturer, and educator with over 20 years of experience in academia and in the food and dietary supplement industries.

She currently serves as Chief Science Officer at Symphony Natural Health. You can visit her at deannaminich.com. And again, we're talking about how to optimize melatonin levels and promote healthy brain aging.

In particular, we're going to answer the question, what is melatonin? Why is it so important? We're going to go into what melatonin imbalance, how that impacts inflammatory levels.

And also root causes of melatonin imbalances and chronic inflammation, as well as the top nutrition and lifestyle tips to balance melatonin and inflammation.

So you can really think sharply and clearly, get great sleep and really be at your best so you guys are in for a treat. Let's go into the interview with Deanna Minich.

While. Deanna Minich, great to connect with you here. I know you've been doing a lot of research on melatonin. I'm really fascinated about by melatonin and what we're finding in the literature.

And so I'm really excited about this conversation. So let's start with what is melatonin. Well melatonin. Let me just first say it's more than a hormone.

I think that most people, when they're picking up on a lot of the media releases and a lot of the fear that gets circulated around melatonin, I think it's always couched within this aspect of sleep.

And what we know is that melatonin is truly beyond, a neuro hormone that connects to circadian rhythm for sleep. It does a lot. It's actually a very ancient molecule.

I mean, it's been around a long time. Its official name is NSC. It all five hydroxy trip domain.

What Melatonin Is and Where Itu2019s Made

So it is it does function as a neuro hormone when it's released from the pineal gland. But we actually produce it throughout the body. So it has auto cran para cran endocrine type of an effect, depending on where it's produced.

And I would say that, you know, the two organs that produce the most amount of melatonin in the body would be the pineal gland in response to darkness.

And we can get into that because that ties into sleep and circadian rhythm. And that's where a lot of the anti-inflammatory detoxification aspect takes place.

And then the other organ where there's a lot of melatonin produced is actually the gut. You know how most people know that most of your serotonin is produced in your gut?

Well, actually, melatonin comes from serotonin. So if there's a lot of serotonin in a particular organ system, you can infer or imply that many times there'll be more melatonin.

So the gut is a major producer of melatonin. Well, it's really interesting. And what are the major functions of melatonin particularly in the gut. Well obviously I want to come back to pineal gland.

That's what most people are familiar with. But instead of curiosity in the gut, what are some of the major functions? You know, that's an interesting question.

And I feel like even though the most amount of melatonin is actually produced in the gut, I feel like we don't know as much as to why that is the case.

Just like we don't, I don't think we fully understand why there's so much serotonin in the gut, or why there are all these neurotransmitters in the gut.

Outside of the sheer fact that anatomically and physiologically speaking, the gut has that gut associated lymphoid tissue, it's got smooth muscle. It has, an endocrine aspect to it.

So, you know, and it's large. So it's going to produce a lot. But why is it produced there? Well, there are a couple of different ideas around that. One of them is that it may have a role in motility.

So there might be some aspect there. There is some more, I would say emerging research to suggest that melatonin in the gut might actually be modulating the gut microbiome, which kind of makes sense.

I mean, what doesn't modulate the gut microbiome, right. It's like any of these signals coming in. But there was a very intriguing study in which, they were looking this was specifically in animals and showing that when the mothers were given melatonin, it helped to shape the gut microbiome of the offspring.

So in early life. So there's some aspect here that might be connected to modulation of the gut microbiome, gut motility, perhaps even some of the secretions of the gut.

But I don't think we fully understand the localized effect of melatonin. And the difference here too, between the gut and the pineal gland, is that the gut doesn't produce melatonin in response to darkness, like the pineal gland, it seems to be a response to things like meals or a postprandial effect.

But I think that again, there is that gut brain connection. Perhaps there's more than we fully understand here. So I'm just going to say that there's more.

You know, melatonin plays an important role in the immune system. And so you have what's 80% of your immune system in your gut with the gastro associated lymphoid tissue.

So it makes sense that it would be have some sort of role there. And you know, the communication process. That's a really good point. In fact, that's kind of what piqued my interest in melatonin some years ago is that, you know, with all of the discussion of viruses and Covid and whatever else, there started to be discussion around melatonin.

And I was thinking, why is this? You know, I'm used to talking about vitamin C, quercetin, zinc, you know, the steady eddies. But I wasn't I just didn't know enough, enough about melatonin.

But now I can see that there's clearly an interrelationship for the reason that you just mentioned that from an immune system activity perspective, there could be an interrelationship.

And you do find melatonin within the immune system just even the individual players of the immune system do connect into melatonin. Yeah, it'd be interesting to look at melatonin levels and its relationship.

If there's any sort of relationship with Secretary IGA. Right. And some of the major components in the gut. That's a really good question. I'd like to ask you because because Secretary Ige was also in your, all your epithelial tissue, all your mucus tissues.

So yes. Yeah. Yeah. That's a really good, a really good point. And probably there, there is. It's just that I think a lot of the nuance between melatonin and a lot of these different dynamics, they haven't been so clearly delineated like they have been with the circadian rhythm in sleep.

Yeah. For sure, for sure. Well, most of us when we think about melatonin, and I know for me, for probably up until maybe a few years ago, I just thought about melatonin as our sleep hormone.

Right. And its impact on the pineal gland. Can you give an overview of that? And then, let's talk about what happens with a melatonin imbalance. Yes. Okay.

So let's talk about the pineal gland. The pineal gland is in the brain. It is a true endocrine gland. So the way that melatonin is secreted by the pineal gland is that the eyes we have very specific types of cells within the retina.

So the eyes have to perceive darkness or this absence of blue light. So we start to see that as it becomes dimmer throughout the day. What ends up happening is that the retinal cells respond to that and then send a signal to the super asthmatic nucleus, which is in the brain, which is then eventually talking to the pineal gland to create that, that catalyst of, of that conversion between tryptophan, serotonin and then melatonin and then that melatonin that is produced is then circulated systemically in order to key into cellular clock genes, in order to synchronize the body's systems to circadian rhythm.

Melatoninu2019s Role in Sleep, Detox, and the Gut

So that's essentially what melatonin is doing. And that's why when people think of it for sleep, they think, oh, melatonin is, helping me to sleep. But melatonin is actually doing is it's signaling the darkness to cue the brain to start to synchronize with that diurnal rhythm.

So it's a synchronizer. It's connecting to clock genes. And what melatonin is good at as it relates to sleep is getting you to sleep, but not always staying asleep.

Right. And many people think that melatonin is supposed to be solving all of their sleep woes, but that's not actually how it's working or intended to work, or even how it just naturally is produced in the body.

Yeah. Let's talk a little bit more about that. So you're saying it helps you get to sleep but not necessarily stay asleep? Is that because your melatonin levels start to drop as the night goes on?

Well, we do so as it's dim. So let's just imagine like your typical day, it starts to get dim at about 6 p.m.. And and with that level of dimness is that rises, your melatonin rises.

And then you, you produce the the most amount of melatonin from your pineal gland between, you know, somewhere between 2 and 4 a.m. at that pinnacle of darkness. Right.

So that melatonin is not just allocated for sleep and circadian rhythm. We're actually doing a lot of cleanup at night. So when I think of the morning, I think of, okay, we're in our young we're in our active phase with cortisol, testosterone.

We're moving. We're doing stuff at night. We start to see this increase, especially at around that 2:00 am spot where we start to see that certain enzymes change.

So things like glutathione oxidase or even, superoxide dismutase, you know, catalase is up, glutathione goes up. And so it seems that melatonin is in concert with a lot of these different antioxidant defense enzymes.

And this is when I'm sure that most listeners will will know about this, that we have that brain detoxification that happens through the lymphatic fluid.

So that lymphatic fluid flux, which is so important for the release of things like amyloid peptides or metabolites,

paper, phosphorylated tau proteins, anything that needs to come out of the brain can only do so when we're not active and engaged.

So we have to be sleeping. And as it turns out, what we see from some of the research that's been done on melatonin and the lymphatic fluid is that there seems to be a relationship between melatonin perhaps serving as a transporter of some of that waste from the brain, or at least being implicated in some aspect of that process.

Yeah, it's really interesting. I mean, we know that proteins basically run everything in our body, and oxidation or rusting is what damages a protein.

So it's just our daily life. We end up with these damaged proteins, and then we've got to neutralize them and basically eliminate them. And so melatonin is a part of that.

That whole process of helping neutralize and eliminate them. And it's interesting as a brain actually gets more metabolically active at night while we're sleep.

Yes, yes. And that's why sleep is so important. Because, it's recalibrating, you know, that's our rest and digest and it's it's digesting thoughts. It's digesting memories.

It's a lot in the mental sphere. In some of the other research on melatonin, which suggests that it acts as a neuroprotective nerve growth factor. So during the night when we're sleeping, it's not just that we're clearing waste.

We're actually creating the space to generate new neurons. So these neuron tropic like effects of melatonin, I think are really intriguing. There's an very interesting article by Doctor Russell, writer, who is one of the premier researchers in melatonin and has been for many decades.

And he calls it brainwashing. You know, not not the kind that would be undesirable, but the kind that is desired. You know, we want that kind of brainwashing right?

And for so long, you know, talking about detoxification. And, you know, we often think of liver, gut, kidneys, skin, lungs, you know, the, the, the general, aspects of detox.

But the brain detoxifies and it's thought that at nighttime, during sleep, through the help of melatonin and some of these other compounds which seem to be working in concert, that that is happening.

So, you know, when people say, and I don't know if you've seen this as well with clients, is that, you know, many times people will say, well, I wake up at 2 a.m., you know, it's like that 2 a.m.

wake up club. Why is that? Yeah. So good question. Right. Yeah. And having a number of things blood sugar could be an issue right. They they might not have the right sleep hygiene.

There's a number of things. There can be a number of things. Thank you for for chiming in on that. You're right. So many different root causes. It could be hormonal.

So in perimenopausal women, you know, when you have upregulated inflammation and a lot of those wake up times, it could be related to physiology and just needing to to use the restroom, you know.

Or it could be pain. It could be, like you said, fasting. Blood sugar could be really low. And so there can be a lot of those different reasons. What I think is really interesting, though, is that if you look at the traditional Chinese medicine chrono therapy and you look at the different organ times, so there are two hour blocks that they see is allocated to certain organ systems.

And between 1 and 3 a.m. is allocated to the liver. Yeah. And so this is in my own mind right. This is no science. This is just kind of thinking through everything.

If 1 to 3 a.m. is liver time, at least in traditional Chinese medicine. And we know that between two and 4 a.m. is when you see the peak spike of all of these different types of detoxifying hormones, it kind of feels like, well, if somebody had a lot of activity going on here, a lot of inflammation, you know, whether they're perimenopausal, they've got some health condition that's compromising them.

I mean, they might actually have a lot of activity where it could get a little bit unsettling. There could be some some sleep upset because of that. Right.

So I when I'm thinking of that 2 to 4 a.m. wake up, I'm thinking, how is the detoxification system? How is the liver in the liver is keyed into those clock genes pretty closely.

In fact, when you look at all of the different clock genes and where is the largest concentration and the greatest degree of oscillations, it's actually the liver.

The liver sets the stage. So isn't that interesting. Just kind of how, you know, we need to detoxify. So when can we do it at night. Yeah, it definitely makes sense.

And I'm glad that you brought that up. As far as the liver having those clock genes, because, you know, we have a central circadian rhythm, which is more or less like telling us when to sleep, right, or when to have energy.

And then we have a peripheral, kind of a peripheral circadian rhythm that is in all of our cells, basically. Right. It's being impacted. I mean, there's some level of communication there in all the cells of our body.

Yeah, it's like an intelligence that's connected to that of nature. And so when people are out of alignment, so this is when things go out of whack, when seasons change, shift work jet lag, you know, we start to change up the circadian rhythm.

And so like even for people that think that they're engaging in really healthy activities, but they're doing it at night under fluorescent lighting. You know, I even think about people that go to the gym really late or they're in a library very late, or to a sporting event, you know, all of that artificial light at night.

It's called alien. It's really acting as an endocrine disruptors. So I think we do need to be thinking about what exactly what you said, kind of like that centralized clock system through the super matic nucleus, the peripheral.

How is the liver working and why can things be just thrown off? It's because we're not in alignment for some reason. Yeah, for sure. And a lot of people are dealing with melatonin imbalances.

I know I've heard you talk about darkness deficiency as well. Let's talk about some of that. Some of those issues. Yeah. Well, well and there's another phrase I'd like to bring out for everybody.

It's melatonin. Pause. I was on a podcast with doctor Dick and Weatherby, and as we were talking about all of the situations where melatonin can be low, and I was describing how children, children pre puberty have the highest levels of endogenous melatonin that they're going to have their whole lives.

And then as they go through puberty and just young adulthood, those levels start to come down. By the time you're in your 50s, you're really low. By the time you're in your 60s, it's just bottomed out.

So he was saying that that sounded like melatonin pause, which I thought was very creative. And yeah, and it does parallel other hormones. Right. So yeah, it makes sense.

But there can be other things that can prematurely bring down our endogenous melatonin. So I'll list a couple of those. I already mentioned the artificial light at night.

Circadian Rhythm, Darkness Deficiency, and Low Melatonin

So wearing those blue light blocking glasses, which I have all by my computer right now, it's like midday. So I don't need them. We can have that blue enriched light.

But the moment again it's dark outside and we're not keyed in to that darkness. Then it starts to look like, you know, we have an overabundance of light.

We can call it light excess or darkness deficiency. Either way, you cut it. You know, I think that we're very tuned into sunlight, and I don't think that human beings have tuned into darkness many times.

Humans fear darkness. They don't want to be in the dark. They're working later. You know, it just feels more comfortable to have more electric light all around.

But this is damaging ecosystems on the planet, and you can even see the Earth from afar. All of the different photographs over time. And you can see how illuminated it is.

So this is darkness deficiency. And this is impacting us at the level of our endocrine system, which, as you clearly mentioned, were impacting all of the cells that are keyed into this.

And then we start to go off rhythm. So I think that this has implications for immune disorders. Autoimmunity. You can see low melatonin status with conditions that would tie into neurodegeneration.

I mean, with your summit focusing on any condition that relates to inflammation, which is just about every chronic disease that I can think of, whether type two diabetes can be, implicated with low melatonin levels or even looking at, you know, any hormonal disturbance.

Like, even if we looked at polycystic ovarian syndrome, when we look at, changed androgens and insulin, there's also some changes with melatonin. So any time you're tugging at the hormone web, you're creating this ripple ripple through effect of changing melatonin.

So if you're stressed and your cortisol levels have changed in some way, then you're changing melatonin. So as you could see, there would be implications for many different factors that could change melatonin in one's body.

Yeah. So a lot of factors. But probably the biggest stimulus is that that light exposure. And I've for light I've heard the phrase mal illumination is to the body what malnutrition is to the body.

And we think about food and we think about, okay, we're not getting the right nutrients. We're eating a lot of pro-inflammatory foods going to impact our body for getting the wrong type of light, particularly timing our light right.

Like you talked about, we can get blue light exposure during the day. That's no problem. That tells our body that it's daytime and then we should have wakefulness.

But if we're getting blue light at night, it tells us again it's daytime and then we, we suppress melatonin. And so we've got to get the right timing.

And that all plays into the proper, proper light exposure. Yes. And, just a couple other points there, David, in terms of, personalization, because there are some people that are going to be much more sensitive to this than others, like people with light colored eyes are going to be more vulnerable to the effects of artificial light at night.

They will have, there was one study that showed something on the order of about a 17% greater suppression of endogenous melatonin synthesis compared to people with dark brown eyes.

Now that doesn't mean people with dark brown eyes shouldn't wear blue light blocking glasses, but there are certain indications where there might be even greater sensitivity.

Another aspect to be thinking about is actually the moon. There's a lunar rhythm to overlay on top of the circadian

rhythm, and it was really interesting because, you know, many people will say, oh, I don't sleep well during the full moon.

And you could say, well, that's because it's very bright outside. And so, you know, you're just not getting your, your darkness quotient. But that's actually, there may actually be more to it.

There was a study that was done in a sleep lab with all of those variables controlled for. And what they found was that for four days before and four days after a full moon, endogenous melatonin production was decreased just by way of just having this change in the moon.

So I don't know if that's because of hormones. Maybe flux with water hydration. I mean, it's hard to say, and I don't think we fully understand it. The other relationship that people may have that may make their their melatonin status more nuanced or personalized is their vitamin D status.

And that's actually the article that we wrote that was entitled, is melatonin the Next vitamin D? One of the things that we observed is that melatonin and vitamin D are kind of like brother and sister.

I would call them circadian nutrients. You know how vitamin D has been called a hormone? Melatonin has been called a hormone, but it's not fully a hormone.

It's very different in some ways. You know, so mitochondrial regulator, it's an amp like antioxidant, you know, vitamin D and melatonin kind of share similar pathways.

And in fact, there was one study that suggested that when you correct for vitamin D status, you help to correct for melatonin levels as well. So isn't that interesting.

So you know, the body is a web. The body is you know, we've got this systems biology. And each of those systems is anytime you're tugging whether it's a hormone the gut microbiome darkness, light, vitamin D nutrients I mean it's just going to change the whole inner workings.

Yeah. It makes a lot of sense. And I have light colored eyes and I'm extremely light sensitive. Like I wake up the moment the sun comes out right and gets in my room.

I'm up like I can't sleep in 82. And at the same time, it's like when I put my blue light blocking glasses on. At night, we dim all the lights in our house like I'll have tons of energy and then once I do that, after about five minutes with my blue light blocking glasses, I'm like tired.

I'm ready to sleep. Yes. Yeah. Yes. And the other signal that it's time to sleep, especially if you're sensitive and you're keyed into your body like you describe for yourself is note a temperature change?

So I don't know about for you, but I know that around like 9 p.m. I kind of get that chill of like, okay, it's time to put my pajamas on. It's time to put the robe on.

I'm kind of getting that's melatonin. One of the functions of melatonin is to regulate core body temperature. So that's even more crucial for again, if we think about perimenopausal women, how they're less protected through estradiol and other aspects that would help their immune system, they tend to be more inflamed.

It might be worthwhile to bring in something like melatonin supplement to help to fill the gap, right? Because that core body temperature, the immune aspects, I mean, the, even something like blood pressure is under the regulation of melatonin to some degree.

So I just find it fascinating because, again, most people think, oh, melatonin, that's just for sleep. But it's no, it's it's body temperature. It's sleep wake cycle.

It's your cortisol. It's your other hormones. It's, you know, the inner workings of the immune system. It's

neurotrophic in its ability to act as a growth factor.

It's helping your gut. So I think that there are many other functions of melatonin we probably don't even understand. I find it a very. And this is why when I see people just cast it aside, like, oh my gosh, I can't take melatonin because it's just going to stop my body from making it.

It just doesn't work like that. It's a good question to raise, but taking supplemental melatonin, I think, is probably one of the top things that people can do to age.

Well, you know, if you look at a lot of the top biohackers, they're all talking about melatonin, every single one of them. But then you get like this core group of people who are very polarized to melatonin, thinking, oh, you're going to change up your, your body's hormones.

But essentially because we have such low levels, we could be repeating to the aspect of optimizing things like our mitochondria. Right. Because if you look at the cell and you just kind of zoom into the cell, the place where most of that mitochondria are, I'm sorry, most of the melatonin is made is in the mitochondria.

And that's where a lot of the oxidative stress is occurring. So what melatonin is doing is creating darkness and trying to put out all of the light, all of those oxidative bursts.

Because of all of that oxidative stress that's happening in the mitochondria. So I think from an aging perspective, it makes really good sense to be thinking about that longer term just at even a low dose level.

And the studies would suggest that between 0.3 to about one milligram of supplemental melatonin is kind of hitting that sweet spot, because if you look at endogenous production by the pineal gland, if you just repeat back to those levels, that's what we're looking at is about 0.3 to about one milligram a really it's actually a really low dose.

It's a very low dose. Well, it's physiologic, let's say it's physiologic rather than supra physiologic. Right. And when people think, you know, some some people have in their mind like if a little is good more is better.

Well with melatonin the tricky part here from a personalized perspective. My husband's actually like this. If he takes even a low dose he doesn't metabolize it in the way for example that I do where and we can look at the kinetics.

Right. So one of the enzymes that metabolizes melatonin primarily is called cytochrome one two. This is a liver enzyme. This is the same enzyme that caffeine runs through.

So you can kind of tell how you would metabolize melatonin by how you metabolize caffeine. I can have an espresso at 9 p.m. and go to bed doesn't affect me.

Which means, you know, I would metabolize melatonin fairly. Yes. Whereas my husband is like, okay, that morning coffee and that's it. He's a slow metabolism.

So somebody like him could get groggy, or at least that signal of melatonin kind of playing through the body and going through that systemic effect. It might be a bit delayed.

It might lead to just a little bit of a changed physiological response.

Supplemental Melatonin: Dosing, Timing, and Quality

And, you know, we just have to take into account personalized kinetics and how important that is. And many people don't realize that that timing of when you take a melatonin supplement is really essential.

Like on the whole, if we just start with, you know, not knowing somebody. Kinetics. Typically a melatonin supplement is taken about 40 to 60 minutes before bedtime, and that's about when I take it.

In fact, I even recommend that people keep their melatonin in their bathroom as they're brushing their teeth or getting ready for bed. You know, by the time they make it into bed, you know, that's that's usually a good time.

But for other people, they need to back it up. They may need a 2 to 3 hour window before bedtime to actually make that melatonin work best for them at that low dose, because they're such slow metabolism, it could be a slow metabolism.

Yeah, there can be interactions too with different if people are taking medications. So, you know, to take it away from those things because it does go through hepatic metabolic processes.

So we just need to note that. And the other thing where people say, oh, but I, I had headaches, I was fussy in the morning I was groggy. And then I would ask them, you know, what kind of melatonin supplement are you taking?

Because some melatonin supplements may have other things in them. They may actually be taking too much. And if you take too much melatonin, one of the things that can happen is that the melatonin can sit on the receptor sites longer, so there may actually be a more delayed reaction.

And I think for people that take like double digit amounts of melatonin, triple digits, you know, I think after a while because there is that neuro hormonal aspect of melatonin where it does sit in a receptor.

After a while, you're going to saturate the receptors and you might have a threshold effect. So when you're in a lot of cells, yeah, a lot of melatonin supplements also are delayed release stuff.

Yeah I guess would be good for maybe a a fast metabolize or right. But for a slow metabolize or could cause more more issues. There. Yeah. And do you really need that that's true.

I mean there could be some, some aspect there. The type of melatonin that I like is actually in a plant matrix. So that that natural plant matrix just creates a more natural sustained response without having to add in, like phthalates, parabens, a lot of the lacquers that are put on to a slow release formulation or, you know, tying it up in some kind of a, I don't know, like a synthetic matrix because a lot of the melatonin supplements on the market, I have to say, if you look at their, their origin and how they're made, they're synthesized, in a chemical process.

And so by, by way of doing that, there's, there's one article, that was put out some years ago, and I think 2018, talking about all of the different potential contaminants that can result by way of that chemical, synthetic process.

So you can get thalamic derivatives, you can even get, you know, just, a whole host of different things that, yeah, would, would not be, you would they would be contraindicated or you don't want those.

So how many companies are actually looking at these different contaminants in a melatonin supplement. So the quality of the product. Yeah I mean the quality would be something to be looking at.

And that might be causing an issue or the grogginess or a paradoxical effect is there something in the supplement that's causing an amplified response that would be an undesired effect?

You know, that that could be the case as well. So yeah. And you said your favorite kind is in a plant form. So let's talk about foods and plants. Do they contain any levels of melatonin.

That's where my mind went first. I mean because I'm such an advocate of eating plants. And if you look at a lot of, I mean, first of all, melatonin occurs naturally in foods.

So you would see them primarily in the reproductive portions of things like fruits and vegetables. So nuts and seeds would tend to be high. I, I'm sure that you've seen things about pistachios, you know, have a handful of pistachios before bedtime or drink cherry juice before bedtime because has melatonin, right.

So that initially when I saw a lot of that, I thought, well, how intriguing. You know, maybe I can put together a high

melatonin diet. But then I started to do some of the mathematics, and I had other people check my math just to be sure, because, you know, first of all, the amounts of melatonin that are in natural plant foods, they're not standardized.

So you can't always bank on a certain amount of melatonin in cherries at a certain time of year. And plus you have different varieties. And so let's just take that as an example.

So what I had to do is switch through the literature to try to find where there was a range established for cherries, and then also looking at some of the other foods that are high.

So then I did some calculations to figure out, well, how much would you need to eat of things like pistachios or tart cherries in order to get even the physiologic dose?

The 0.3mg that I spoke about earlier. So when I calculated that for cherries, I came to like 2700 cherries. When I was looking at pistachios, it was like over 1500 raw pistachios.

So I don't think people are going to be taking that kind of an amount in. And that's like for a modest physiologic dose of melatonin. It's not to say that those foods don't have anti-inflammatory benefits.

I mean, they have polyphenols. When I look at tart cherries, when they're in season, they're wonderful. They're great Chrono biotic, you know, high polyphenol foods and they would be anti-inflammatory.

So by all means, don't stop eating those foods. Just not 2700 cherries to get the melatonin. Yeah. You're really not going to get melatonin from food.

But let's talk about maybe infrared exposure or really just, you know, the the various forms of light that we can be exposed to or, you know, of course, infrared.

I know it helps initiate melatonin. And you can get an infrared sauna as or, infrared mats, things like that. You can, the thing with the photo bio modulated by bio modulation aspects of melatonin is that you're working through this skin.

Right? So this is not the pineal gland. So you're generating more melatonin at the level of the skin, which is good. I mean, there's nothing wrong with generating that and having that go probably localized or just ramping up the mitochondria.

And I have looked at the research on red light therapy. I think it's wonderful. It's emerging. I think sometimes there are a lot more claims that are being made on it than are actually, evidence.

Driven. So, you know, I love I have a red light device at home and I use it for things like skin or pain or, you know, just in general as far as helping with melatonin.

Sure. I think a better way to get melatonin if you just want to prime your day, is to get that bright early morning light. Right. Just go outside, even if it's cloudy.

You know, you were asking me where I live. I live in the Seattle area. It's cloudy a lot here, but you're still getting full spectrum light even if it's cloudy.

So you go outside, you get the the retinal receptors primed to that light that already will initiate cortisol. It'll help with melatonin for your nightly synthesis and then making sure that you are adjusting the light at night.

And of course, I think that again, supplemental plant melatonin like an Herb Tonin type of product, which I like a lot because there is actually research on it will be helpful for just kind of filling the gap of when you can't live a perfect life.

When you're on the computer late, you're still wearing the blue light blocking glasses, you know, or you happen to go traveling or you're a shift worker.

I mean, goodness are just so many indications for which people might want to be thinking about a supplemental, plant melatonin. And back to even that brain detoxification aspect.

Right. I think in order to primed the brain to feel better, and it's amazing. You know, I've had people come to me after taking a nap, more physiologic 0.3 dose.

And it's amazing how many of them say, you know, at first I didn't believe that it could make a difference, but it was rapidly changing things like improving blood glucose, improving wake up, improving so many different things.

Just even with that small tweak. Yeah, that's really good. And for my experience personally, I feel like the, infrared exposure really works on that kind of peripheral.

Yes. The peripheral circadian rhythm and helping all the mitochondria. I know I use a lot of infrared. I actually have a office chair mat that's got PMF and infrared, and my wife and I will lay on a PMF infrared mat at night before we go to bed.

And when I get a chance, I get in my sauna or I use my red light. Things like that. And I feel like inflammation is reduced daily energy is great with that.

But much less of an effect on sleep quality. I think it probably has some effect, but lesser of effect than getting on, dimming all the lights, really focusing on good sleep hygiene, right?

Like dimming all the lights, blue light blocking glasses. And then for me, I respond really well to melatonin supplementation. Right? I like the herbal tone and product.

You know, that you mentioned, I think it's a really great product. And so for me, I notice and I test my sleep with aura ring. Yes. I've noticed, you know, with good sleep hygiene, definitely see big improvements in my sleep.

And then adding in that melatonin also really, really helps. Okay. So that's exactly what I was referring to. I've had so many people tell me exactly what you just said about their aura ring response, how it's like, oh my gosh, you took urban tone in and and sleeping better.

My blood glucose is better because they'll wear a CGM in concert with looking at the aura ring and kind of like map everything out and they can see those changes happening quickly.

So I think you know, with urban tone in what I like about it too, is that again, it is the plant matrix and it's from Chlorella, alfalfa and a little bit of rice.

And there was a side by side study, and it was a study in which they looked at inflammation. Right? I mean, this is what our, our focus is. And so they looked at inflammation.

They looked at oxidative stress. And so in these cell models, they put the Surbiton in side by side with synthetic melatonin, which is 99% of what you find in supplements on the market and what the researchers found.

Now, this was in a publication in 2021, in the Molecules Journal, is they found a 646% greater anti-inflammatory effect. With the urban Tonin. They found up to a 470% greater free radical scavenging activity.

And then they also had a skin cell line in which they looked at reactive oxygen species and the urban tone, and performed 100% better than the synthetic melatonin.

So to me, it's kind of like, why take just like a synthetic melatonin, where again, you don't know about the risk for contaminants? What about the interactions with other things that are in there potentially.

Food Sources, Light Exposure, and Plant-Based Melatonin

But when it's from the plant and it's the same kind of melatonin that's in our human bodies, it's like the response is amplified by a lot of the other different agents that are in there, like lutein and zeaxanthin.

You know, there are trace amounts of certain things that you would find in those plants. You know, like the chlorophyl, if you actually look at the urban tone and it's green.

So, you know, it looks like it's just right from the plant, but it's been standardized to a certain amount of melatonin, so you know exactly what you're getting.

So it's not like you go to the store where you don't know what you're getting. Like what what's the amount in that particular plant? How much do I have to eat?

You don't have to do all those calculations. And what are your typical recommendations for dose aging? With the melatonin, you mentioned the timing like 40 or 60 minutes for go to bed.

But as far as like how many milligrams and should people like start somewhere and then, you know. Yeah. And somewhere else. Yeah. And I would say this is the same premise I would go with for any clinical introduction of a new nutrient.

I always think of go low, go slow and then ramp up based on personalized responses. So when it comes to melatonin, especially if somebody is middle aged, let's just say hey, like they're 35 and older.

I think that bringing in that physiologic dose of 0.3mg is appropriate. By the way, I just want to insert too. I don't think that children need supplemental melatonin, for sleep.

I think that we need to start looking at sleep hygiene. Their melatonin should be sky high if they are adhering to sleep hygiene, unless there would be some indication like attention deficit disorder or even autism.

You know, in certain conditions, there may be application of using supplemental melatonin for those children in order to reestablish the gut microbiome and such.

But not for sleep. So let me just make that point really clear. I'm talking about middle age. Let's bring in that physiologic dose 0.3mg. It's kind of like you're filling the potholes is you're losing melatonin.

You're just starting to fill in and pave that way so that you have less inflammation so that you have better oxidative stress repair and rejuvenation at night.

And then let's just imagine that you're perimenopausal, maybe you're 45 to 55 and you're kind of in this period where you just your temperature is off, right?

You may need a little bit more. I know for me, when I went through perimenopause, I increased my verboten in dose to three milligrams. I wanted additional support.

Right. And you don't need to be on that forever. But I think when you're going through things like whether it's a, you know, heightened bouts of inflammation or even, you know, let's just say jet lag.

You know, jet lag is a classic one, but that's a more acute, higher dose response where you might need 3 to 6mg. So and we have a sleep expert on our medical team at Symphony Natural Health.

And we we have asked just to kind of get her thoughts on this. And I think that even before you start the travel, having a low dose of verboten in so doing the 0.3 and being consistent with that and then trying to adjust your sleep even 15 minutes, and then when you travel to your point of destination, like if I was going from Seattle to Stockholm when I'm in Stockholm at bedtime, when it would be dark, I would take a higher dose at three

milligrams, or if I felt like I needed double that, like six milligrams, if I'm really just feeling inflamed.

You know how sometimes when you travel, it's just like you're not feeling your your best and it just gets worse when you're traveling or if you're feeling good, you might just need the three milligrams.

So I think for those kinds of indications, I think, how about somebody that's working maybe shift work. Yeah. Now that shift. Right. So they may actually need, melatonin in that way to actually change the phase of their sleep.

So they might need a and there's a way to do this with phase delay or phase advance. They may need to take that melatonin six hours before they are anticipating going to bed.

And then when they come home from their shift work, take it immediately to kind of reestablish their sleeping pattern. There are ways to do that. There are protocols for that.

And that's a melatonin supplement can actually help with phase delay or phase advance of a sleep cycle, like some people want to know. Can I become more of a morning person?

You can actually use melatonin to to help your body to sync to a different circadian rhythm. Because again, that's what that melatonin is doing, is it's keying into the circadian signal within the body and creating that synchronization.

Yeah, it's really good. Our last question let's take you mentioned a lot of different strategies as far as kind of setting somebody up for optimal melatonin release at night.

Yeah. Let's let's stop right here and just say okay, take us through a day and different things people can be doing from the time they wake up. Until the time they go to bed to help optimize that melatonin release.

I love that, because it's all about creating a new routine and regimen, right? That we can anchor these practices into. Okay. So and I'll actually kind of walk through my day because I feel like I try to do this as best I can.

So, you know, waking up with the sun, you probably do this too, right? So, you know, and in fact, I'm part Swedish. And when I went to Sweden, one of the things that I noticed is that people don't have, blinds or curtains in their bedroom, but they are sleeping with the moon and the sun, so I actually do the same.

In our bedroom is I just keep. And we live in a rural area. So let me just say that I can do that. So it's like literally I am getting the signal of light, when it does come up.

So and then once we are awake, I think it's really important to hydrate and to kind of get things moving. I use a little bit of a, a salt water solution that I call soli.

Right. You know, kind of get glucocorticoids. Mineralocorticoid cortisol is supposed to be high in the morning. You go outside, just get, a couple of fresh breaths of air, and at the same time, you know, just getting your eyes primed to that full spectrum light, and that can be done in like a minute.

That doesn't have to mean like, you have to go outside. I mean, we have a deck. And so I, you know, many times in my bathrobe, I'm just out there just getting that signal to my eye.

And keep in mind, too, that when we eat is an important regulator or kyber for setting that circadian tone. So eating some kind of meal in the morning.

And there's all kinds of debates on this. But in general, having a moderately sized breakfast and then moving through your day and then I would say in terms of what you're eating too, because that can help to inform inflammatory status, melatonin status, making sure you have adequate protein.

And the reason why is because the way that your pineal gland, even gets that melatonin is from tryptophan.

Tryptophan is an amino acid. It comes from protein sources in the diet.

So making sure that we've got protein at every meal and that we're digesting that protein, I think that that's also really key. So then we move our way through the day.

Daily Habits to Support Healthy Melatonin Release

And if we kind of feel like we're, overextending our eyes, I feel like so many people are getting eye disorders or having eye strain or retinal detachment.

I mean, I don't know what it is. I've just been hearing about this from so many different people. You know, if during the day you're on the computer and you feel like it's too much, you can dim the light on your screen, you can where there are different types of blue light blocking glasses where you can get different intensities.

Right. So you know, I even have one right here where you're typing. Yeah, exactly. It's more about the glare and there isn't as much of a coating. And then others are going to be much darker and even red, you know, you can go from orange and then you can move into red as it goes through the day.

And I think stopping eating 2 to 3 hours before bedtime is also a pretty good signal. Not so far before bedtime, because you don't want to have low blood sugar late at night or, you know, like in that 2 to 4 a.m.

range. But then as it gets dimmer, you know, start to have a, you know, I like what you said about a lot of the red light therapy, you know, an infrared sauna, you know, bring in a lot of the red color.

Even in our home, we have a system with the light bulbs. Where? Through the Philips Hue system. As an app, we can change the colors of the bulbs to, like, purple or orange or, you know, I'm all into color, so it's like, I love it now.

Or you can get a dimmer, too. And like, you can get a dimmer. Yeah. Or just wear the glasses. You know, that's probably the cheapest way to do this is like, you know, and some people get so fixated on, well, what kind of blue light blocking glasses.

And they're all very different. But whatever people can afford and I know I have a colleague who has tested with a spectrophotometer, you know, all the different wavelengths that are, how well those glasses are actually working.

But what I would say is, for the most part, just wear the glasses if you can. And then, you know, there's a lot of benefit and there's research to support the use of those, and then you're getting ready for bed.

You're starting to get a little bit chilled at around 8:39 p.m., you know, taking that supplemental or baton in, starting to wind down and then make your way into bed at about 10 p.m.

and make sure that. Oh, one other thing I would like to mention, too, is that, one of the resources that I have used and recommend to people is an app called Light Meter.

It's a free app. You know, I, I just happened to find it through my app store. And so basically what it does is you can take the, the camera on your phone and then you just move it to wherever your eyes are basically at eye level.

And you can see what you would be seeing in terms of Lux. So lux is the unit of light. So in your bedroom or sleeping room, wherever you're sleeping, I would say get a sense of the light intensity in your sleeping room before you go to bed.

So use the light meter app and make sure that you're at like zero lux. Ideally, you want to be at zero and it's not too hard to get to zero. Believe it or not.

You know, like in some rooms, you know how there's that smoke alarm and there's a little bit of a hue of green or whatever? I mean, basically you can get to zero lux, I think, even if you're in a hotel room, if you have to roll up the,

the towel and put it under the door so you don't have the light seeping in from the hallway, whatever you need to do.

I have a colleague. Every time we would go to a medical conference, she would bring tape with her, like duct tape. And she would put that. Well, I mean you could just really just put a towel over any kind of alarm clock.

So I mean usually alarm clocks aren't even in rooms anymore because people have phones. But thinking about like windows shades, blinds, sleep mask, just an eye mask if you feel like oh, I masks.

Yeah, yeah. You can just get a nice satin or, you know, nice silk eye mask. For situations which are a little bit harder to control. So that's kind of how I would take it.

Yeah, it's a great, great rundown. And I think that's something that everybody really needs to pay attention to. You know, this is something that for the most part is free.

I mean, we're talking about sleep mask. It's ten bucks or whatever. Yeah. Blue light blocking glasses. You can get them as low as $10 or so. Yeah. Very, very inexpensive things that make a huge difference in your energy levels, your brain health, your overall level of inflammation that you're carrying around and that that's perhaps affecting your joints, your metabolism, all those things.

So really, really simple stuff to do. And, you know, just making sure you get that sleep hygiene under control makes a huge difference in your quality of life.

And then I would recommend, you know, you mentioned urban toning. Definitely check that out as well, especially if you're dealing with chronic inflammatory conditions.

Your yes, you know, 40s, 50s. That's when that melatonin is really going down. So supporting that like you were talking about I think these are all really, really great strategies.

And this is so it's an interview everybody needs to hear. And so Deanna, you know, great information. You got something else to say. And I just want to mention one more thing in that whole cascade, your beautiful clothes there.

I want to toss in one more thing that's actually free. And it's meditation. There have been studies showing that long term meditators have increased serotonin and melatonin compared to people who don't meditate.

And I think it has something to do with, again, the calming response rejuvenation, I don't know. But the studies are very compelling. And so, you know, even small amounts of just being in that darkness, closing the eyes when you can't get darkness on the external, bring it in on the internal.

Just close the eyes, meditate, because there is some literature to support that meditation can be helpful for melatonin status. Yeah, it makes sense. I mean, it's helping balance the parasympathetic sympathetic.

And most of us, because we're exposed to artificial lights, we're on the go. We've got a lot of stressors. We're in sympathetic dominance fight or flight.

And so meditate meditation helps balance that, you know, things that are calming breathing exercises, prayer. Right. Gratitude. Yes. All those things help calm our body.

So really good stuff. All right. Well, thanks so much, Deanna. I love this interview. Really enjoyed it. And any last words of inspiration here for our audience?

Yeah, I would say pay attention to the light and the dark. In so many respects, you know, sunlight, that early morning light and also remembering that darkness deficiency, how many of us think of a nutrient deficiency, but we can also be deficient in other things.

Gratitude, love, relationship, whatever it is. So let's add darkness deficiency to that list. So good. All right.